Avid® AirSPACE™

Installation and User's Guide

Avid

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Avid® AirSPACE™ Version 2.6 Installation and User's Guide
Part 0130-04849-01 Rev. B
May 7, 2002

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Using This Guide

Congratulations on your purchase of an Avid® AirSPACE™ multichannel video server.

Who Should Use This Guide

This guide is intended for broadcast engineers and operators who use video equipment.

About This Guide

This guide provides the installation and operating instructions for the Avid AirSPACE multichannel video server.

The Contents lists all topics included in this book. They are presented with the following overall structure:

- Chapter 1, “Introduction,” describes this guide and presents the basic features, options, and configurations of the AirSPACE video server.

- Chapter 2, “Installation,” describes the system hardware, and provides comprehensive instructions for hardware and software installation.
- Chapter 3, “User Interface,” introduces the AirSPACE user interface and describes all user interface controls.
- Chapter 4, “System Setup,” provides detailed instructions for setting up all system parameters.
- Chapter 5, “AirSPACE Operations,” provides step-by-step operating instructions for all basic and optional system modes and features.
- Chapter 6, “AirSPACE with NewsCutter Operations,” provides step-by-step operating instructions for AirSPACE configured with NewsCutter™ systems.
- Chapter 7, “AirSPACE CP Operations,” provides step-by-step operating instructions for all AirSPACE CP™ specific system modes and features.
- Chapter 8, “AiRCHIVE Operations,” provides step-by-step operating instructions for all AiRCHIVE specific system modes and features.
- Appendix A, “Specifications,” provides a detailed list of all technical system specifications and connector pinouts.
- Appendix B, “Troubleshooting,” outlines basic system troubleshooting and technical support procedures.
- Appendix C, “Regulatory and Safety Notices,” lists regulatory and safety notices for the AirSPACE video server.
- A detailed index helps you quickly locate specific topics.

Important Safeguards and Notices

This section provides important safety guidelines for both the Operator and Service Personnel. Specific warnings and cautions are found throughout the guide where they apply, but may not appear here. Please read and follow the important safety information, noting especially those instructions related to risk of fire, electric shock or injury to persons.

Warnings

Please observe the following important warnings:

- Any instructions in this guide that require opening the equipment cover, changing a power supply, removing the motherboard, or changing a disk drive should be performed by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing unless you are qualified to do so.
- Heed all warnings on the unit and in the operating instructions.
- Do not use this product in or near water. Disconnect AC power before installing any options or servicing the unit unless instructed to do so by this manual.
- This product is grounded through the power cords grounding conductors. To avoid electric shock, plug the power cord into a properly wired receptacle before connecting the product inputs or outputs.
- Route power cords and other cables so that they are not likely to be damaged. Disconnect power before cleaning. Do not use liquid or aerosol cleaners; use only a damp cloth.
- Do not wear hand jewelry or watches when troubleshooting high current circuits, such as the power supplies. During installation, do not use the door handles or front panels to lift the equipment as they may open abruptly and injure you.

- To avoid fire hazard, use only the specified correct type, voltage and current rating as referenced in the appropriate parts list for this product. Always refer fuse replacement to qualified service personnel.
- Have qualified personnel perform safety checks after any service.
- Fuses should be replaced with the correct rating and type for the country in which the equipment is being operated:

Location	Fuse Specification
U.S.	UL/CSA (3AB) Slo-Blo® 10 Amp, 250 V
Europe	IEC 127 5 x 20mm Type “T”, Sheet III, 4 Amp 250 V

Cautions

- When installing this equipment, do not attach the power cord to building surfaces. To prevent damage when replacing fuses, locate and correct the trouble that caused the fuse to blow before applying power.
- On a defective power supply, verify that power supply switches are off before removing the power supply or servicing the equipment. When replacing the unit, verify that the replacement power supply is turned off before installing the unit.
- Use only specified replacement parts. Follow static precautions at all times when handling this equipment.
- Slots and openings in the chassis are provided for ventilation. *Do not block them.* Leave the back of the frame clear for air exhaust cooling and to allow room for cabling — a minimum of 6 inches (15.25 cm) of clearance is recommended.

- The AirSPACE video server should not be operated with the front door removed. In order to retain the drives in position, and to ensure proper cooling, drive performance, and minimal electromagnetic interference, the door should be closed during normal operation.
- Do not ship the AirSPACE system in anything but the original shipping container.

Documentation Conventions

The following documentation conventions are used throughout this guide.

Symbols and Conventions

Unless noted otherwise, the material in this document applies to the Windows NT or Windows 2000 operating systems.

This documentation uses the following special symbols and conventions:

1. Numbered lists, when the order of the items is important.
    a. Alphabetical lists, when the order of secondary items is important.
- Bulleted lists, when the order of the items is unimportant.
    - Indented dashed lists, when the order of secondary items is unimportant.

A note provides important related information, reminders, recommendations, and strong suggestions.

A caution means that a specific action you take could cause harm to your computer or cause you to lose data.

A warning describes an action that could cause you physical harm. Follow the guidelines in this guide or on the unit itself when handling electrical equipment.

Documentation Terms

The following terms are used throughout this guide:

- “Clip” and “Event” are used synonymously to describe motion video sequences (such as commercials) that are recorded on the server.
- “Image” and “Still” are used synonymously to describe still or frozen video pictures.
- “Operator” and “User” are terms that refer to the person who uses the AirSPACE video server.
- “Source” refers to an audio/video signal that can be recorded on the AirSPACE video server.
- “AirSPACE” refers to the AirSPACE multichannel video server.
- “System” refers to the entire AirSPACE video server and all of its hardware and software components.
- “SPACE Pod™” refers to Avid’s hard drive mounting, shock absorber, and connector assembly.

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CHAPTER 1

AirSPACE Overview

This chapter provides background information about the AirSPACE video server.

The following topics are discussed:

- AirSPACE Features
- AirSPACE System Options
- AirSPACE Hardware Options
- AirSPACE Support Options
- AirSPACE Configurations

AirSPACE Features

The AirSPACE video server is a multichannel broadcast server that features DV (digital video) compression at 25 and 50 Mb/s, or IMX compression at 50 Mb/s, and offers compatibility with all DV-based acquisition devices. The compact 6 RU chassis accommodates up to ten simultaneous I/O operations (effectively, ten *channels* on five I/O boards), and provides from twelve to 96 hours of on-line audio/video storage capacity — depending on the size of the drives in your AirSPACE system.

The system's storage media is not associated with a particular channel. The storage media is an available resource to all of the channels on the system.

The system utilizes 10/100BaseT or 1000BaseSX Gigabit Ethernet (GigE) for AirSPACE to AirSPACE communications, and for transferring media to and from DV-based devices. By adopting an open architecture, AirSPACE is designed to work with major applications providers in order to create superb broadcast solutions, and to create interfaces in a variety of flexible configurations.

AirSPACE Release 2.0 and subsequent versions support a maximum of eight simultaneous DV25 streams, four simultaneous DV50 streams, or four simultaneous IMX50 streams with concurrent GigE networking. A maximum of 4 streams are supported with 10/100BaseT networking.

System Features

The following system features are provided:

- The AirSPACE system is designed to be operated *primarily* by remote control (from an external automation system or edit controller). For this purpose, AirSPACE includes an RS-422 port for each I/O channel, plus an Ethernet port for enhanced control and file sharing capabilities. For local control, a graphical user interface (GUI) provides full control and configuration capability via monitor, keyboard and mouse.

- Modular in design, the system accommodates up to five two-channel ACV (audio compressed video) boards. Each board provides the following capabilities:
    - Two channels of digital video — one primary, one secondary. The primary channel is dedicated to playback, with both a digital and an analog monitoring output provided.

Analog Outputs are provided for Monitoring applications only. Analog Output timing follows Digital Output timing and there is no color frame ID. We recommend the use of genlocking D to A converters on the output side when the system is to be used in analog environments.

    - The secondary channel is dedicated to recording with input loopthrough.
    - Four channels of AES audio (two AES pairs) per video channel. All AES audio channels are independently editable.
    - Four channels of analog audio per video channel. These channels are dedicated to monitoring the primary video output only.

With a full complement of five ACV cards at DV25, you can use the AirSPACE system for a maximum of 5 input/3 output or 3 input/5 output streams. At DV50, it will be any 4 from 10. At IMX, it is any 4 from 6. Also with IMX, a maximum of only three ACV cards are available because of size restrictions.

A variety of communications and GPI connections are standard for each ACV board. For additional ACV board details, see “Video Input/Output” and “Audio Input/Output”.

For AirSPACE Release 2.0 and subsequent versions, each ACV board supports four AES audio input channels and four AES audio ouput channels with four analog audio monitor channels — per each video channel. Hardware connections for Audio 5/6 and 7/8 are not implemented as of this release.

- Each ACV board is connected to a compact 1.5 RU breakout panel, which includes audio, video, timecode, RS-422 and GPI connections.
- The system's high speed bandwidth ensures multichannel operation and random access capability to all media with concurrent network transfers.
- AirSPACE supports DV at 25 and 50 Mb/s, in both 625 and 525 line standards, using OEM compression to assure bit level compatibility maintaining optimal picture quality. Each ACV includes dual pluggable Panasonic DV compression codecs. These codecs may be changed out for Sony IMX compression modules in version 2.5 and subsequent versions.
- A RAID-3 configuration is utilized for full protection of all data and the file system. RAID-3 provides the large bandwidth specifically suited for image processing, and also provides data security. The operating system information is RAID 1 protected, using mirrored copies of this information on every drive. For additional details, see "System Reliability".
- Two standard current-sharing live-swappable redundant power supplies are included, for system reliability and easy maintenance. Either one of the supplies can run the system by itself.
- System configuration parameters are saved to nonvolatile memory and are preserved in the event of a power failure.
- A software license capability is included that allows system features and options to be changed via software.

Video Input/Output

The following video input/output features are provided:

- Each ACV board provides the following four video connections:
  - Primary Channel:

    1 SDI video output (playback)

    1 Composite monitor output
  - Secondary Channel:

    1 SDI video input

    1 SDI video output (input loopthrough)
- Each breakout panel associated with each ACV board provides the following additional video connections:
  - 1 Component video output (switchable between Y/Pb/Pr, G/B/R and Comp/Y/C).
  - 2 Composite monitor outputs
- A loopthrough analog reference input for Genlock capability is provided on the rear of the main chassis.
- Closed captioning information is always preserved.

Audio Input/Output

The following audio and timecode input/output features are provided:

- Each breakout panel (offered with each ACV board) provides the following audio connections:
  - Eight AES inputs (4 AES/EBU pairs), with 16 or 24-bit sampling at 48 KHz (Inputs 1/2 and 3/4 active in release 2.0 and subsequent versions)
  - Eight AES outputs (4 AES/EBU pairs), with 16 or 24-bit sampling at 48 KHz (Outputs 1/2 and 3/4 active in release 2.0 and subsequent versions)
  - Eight analog audio outputs (Outputs 1,2,3, and 4 active in release 2.0 and subsequent versions)
  - One LTC input
  - One LTC output
- VITC line record and playback reinsertion is configurable on any single or two lines in the selected range:
  - Lines 12-19/275-282 for 525 line systems
  - Lines 9-22/322-335 for 625 line systems
- The LTC output reports the timecode of the currently displayed frame, even when the system is stopped.

Communications

The following communications features are provided:

- Each breakout panel provides two RS-422 remote control ports — one per video channel. Ports are designed for connection to automation systems, and also support industry standard VTR control protocols.
- For basic command-level control, each ACV board provides a GPI connector with 12 assignable control ports (8 inputs, 4 outputs). In Appendix A, see “GPI” for details.
- A 10 / 100 BaseT Ethernet connection is standard on the chassis for multi-unit interconnection, remote diagnostics and external control.
- An optional Gigabit Ethernet (GigE) connection is available for much faster transfers from external devices (like NewsCutter) and between multiple AirSPACE systems. A *Gigabit Ethernet Installation Guide* is provided in PDF format on the AirSPACE Installation CD. Refer to it in the directory labeled Documentation for more information on installing the Gigabit Ethernet card and switch.
- One independent external ultra, wide SCSI connection is provided for communication with external SCSI equipment, such as the optional CD ROM drive for software updates. This port is not implemented for use as a SCSI target.
- A SMPTE alarm contact closure (BNC) is provided for facility use to connect to external annunciator devices to flag operators that a system problem exists.
- For remote diagnostics, software updates, and feature licenses, one of two different modem configurations is provided:
    - For countries in which telecommunications regulations allow the use of U.S. modems, a standard modem connection is included on the rear chassis panel.

- For countries in which telecommunication regulations prohibit the use of U.S. modems, a serial adapter board is provided for connection to a customer-supplied modem.

Diagnostics or feature licensing conducted by any qualified Avid Technical Support member, or software updates initiated either by the user or a remote Tech Support individual may be achieved via the modem over standard phone lines or via a direct Ethernet connection over the internet.

System Reliability

The AirSPACE video server is designed with the prevention of data loss as a paramount system criteria. Several factors contribute to the system's reliability:

- Using a dedicated parity drive, hardware RAID Level 3 parity engine protection is provided on all system configurations. This prevents data loss in the event of any single drive failure and assures uninterrupted video streams on all outputs.
- Redundant current-sharing power supplies provide protection against power supply failures. In the event of a single power supply failure, a system warning ALERT is presented on the GUI accompanied by flashing LEDs on all drives and asserts the SMPTE Alarm.
- Temperature is monitored in seven locations throughout the system. In the event of a high internal temperature situation, a system warning ALERT is presented on the GUI accompanied by the SMPTE Alarm (operation continues uninterrupted). In the event of an extreme internal temperature, a FAIL indication is presented on the GUI and all drives are spun down to prevent damage.
- The large rear cooling fans have tachometer sensing. In the event that one slows excessively, a system warning ALERT is presented on the GUI accompanied by the SMPTE alarm.

The following are important points regarding RAID data protection:

- All AirSPACE systems ship with both a RAID parity drive which is used to reconstruct data and with a Hot Spare drive which is used in the event of any drive failure.
- RAID parity protection simultaneously protects audio and video data (plus file system information) for any single drive failure in a given array (RAID level 3). The operating system is further protected by being *mirrored* on every drive (RAID level 1).
- When the system determines that a drive has failed or is performing below standards, the defective drive is identified via a red LED on the SPACE Pod, and logged in the error log. For an illustration of the drive LEDs, see “Hardware Description” on page 2-1.
- When the system detects such a drive failure, the system begins to rebuild the missing data automatically to the Hot Spare drive.
- A replacement for the failed drive can be installed any time during or after the rebuild process. This drive becomes the new Hot Spare.
- While a replacement drive is being rebuilt, the drive’s two LEDs (blue and red) are lit. The blue LED (only) remains lit upon completion.
- In play mode, if a single drive fails to respond quickly enough to provide the requested data, the missing data is automatically calculated from the parity information.
- In record mode, if an individual drive fails to write its data in time and misses incoming data, a “mini rebuild” is required. The missing data is reconstructed and written to that drive as soon as the system is idle. The situation is noted in the log, and on the drive’s red Status LED.
- In the event of an unrecoverable error during recording, the system aborts the current recording and alerts the operator in both the error log and an alert dialog box.

- A drive's position in the physical disk array is *not* critical. The RAID system software determines what portion of the *stripes* are on each drive, and operates the array identically regardless of drive position.

Do not swap drives between different slots in the array while the system is turned on. The system will not recover if this occurs. However, you can remove a single failed drive and replace it with a spare while the system is operational.

- The system normally boots off the operating system on the first drive (Slot A). Should the system *not* be able to do so — or should a problem develop with that drive — the system will automatically use the drive in Slot C.

Additional software versions may be stored on other drives in the system allowing users to try-out new software versions and retain older ones as a fall back in the event of problems with a new release.

AirSPACE System Options

Each ACV board provides most audio and control connections via a 78 pin connector which may be connected to the outside world in one of two ways:

- Through the Digital BreakOut panel (DBOB) Option, which is a compact 1.5 RU panel that includes audio, video, timecode, RS-422 and GPI connections. See "Breakout Panel Specifications" on page A-7 for more information.
- Through a user-wired connector. See "Connector Pinouts" on page A-8 for more information.

A *Gigabit Ethernet Installation Guide* is provided in PDF format on the AirSPACE Installation CD. Refer to it in the directory labeled Documentation for more information on installing the Gigabit Ethernet card and switch.

The following additional options are available for the AirSPACE video server:

- SPACEnet™ Gigabit Ethernet Network Interface Card (NIC)
  - 1 GigE NIC required per AirSPACE Server
  - 1 GigE NIC required per NewsCutter in non-Unity-based systems
  - 1 GigE NIC required per Transfer Manager for Unity-based systems
- SPACEnet™ Gigabit Ethernet Network Switch
  - Accommodates 8 Connected Devices on 1000 BaseSX or 10/100 BaseT
  - Includes uplink port to additional switches as needed
  - 1000 BaseT Switch also in evaluation as of publishing date
- SPACEnet™ MissionControl NT Application
  - PC-based SPACE-to-SPACE File Transfer Management Application
  - Ingest for AirSPACE to NewsCutter in the NewsCutter 2.0 environment
  - External PC Required
- SPACEnet™ LaunchPad NT Application
  - PC based I/O Control and VTR Emulator Application
  - External PC Required
- DVCPRO50 - 50Mbps DV Server Capability
  - Allows an AirSPACE to be configured to record and play back at DV50 data rates
- IMX50 - 50Mbps IMX Server Capability
  - Allows an AirSPACE to be configured to record and play back at IMX50 data rates
- 20/24 bit Audio with Dolby E Audio Support

  - Allows an AirSPACE to be configured to record and play back audio with 20 or 24 bit precision (versus the 16 bit default)

- Embedded Audio
  - Includes input extract, discrete record, embed on output
  - 20/24 bit Audio is a prerequisite

24 Bit Audio and Embedded Audio options are approved for SPACE Shift applications only in Version 2 and subsequent releases.

- Sony Protocol Support (with Directory Services)
  - Supports editing with most Sony compatible devices
  - Included Odetics extensions for clip creation and/or loading
- SPACE Bank™ Archive Server Connectivity
  - Requires Avalon Archive Manager, Sun Archive Server and Data Tape Library ordered separately
- SPACEnet™ Transfer Tool
  - Provides connectivity to NewsCutter or to Transfer Manager
- AirSPACE SPACE Shift™ Multi Zone Delayed Feed Application
  - Provides Looped Record up to the capacity of the Server
  - Allows delayed Tap playout from any record loop up to 5 concurrent delay times
  - Self-Contained, runs entirely within AirSPACE

SPACE Shift operation precludes the use of other AirSPACE functions (play list, Rec/Mon, etc.) when running.

- AirSPACE Parallel SPACE™ Mirroring NT Application
  - Automatically keeps a slave server updated with a master's events
  - External PC Required

- SPACEnet CountDown™ Play list Controller NT Application
  - Controls Playout on up to 4 Server Channels
  - Supports Mirrored Servers, Browsing, List Building and more
  - External PC Required

All system options listed above are enabled via a software licensing system built into the AirSPACE Server code. Each option listed above is licensed per server *and must be purchased separately for each system on which it will be used.*

AirSPACE Hardware Options

The following Hardware Options are available for the AirSPACE video server:

- The Graphical User Interface (GUI) display
  - Provides a 14" VGA monitor (running in 640 x 480 mode) for displaying the AirSPACE graphical user interface directly from the individual system.
- The CD ROM Software Upgrade kit
  - Provides a CD-ROM drive plus the necessary terminator and interconnect cables. This accessory allows you to reinstall or update the system software on any AirSPACE video server from a CD ROM.
- Spare Disk Drive & SPACE Pod Option
  - Provides one disk drive and one SPACE Pod as a shelf spare replacement for failed drives.
  - A minimum of one shelf Spare Drive option is recommended per AirSPACE system.
  - Note that one hot spare drive and pod are installed *as standard* with each system.

Disk drives purchased from Avid are prequalified, pretested, and include the passthrough warranty from the disk drive manufacturer. If the customer purchases their own drives, Avid is not liable for any consequential performance problems or damages to the drives. User-supplied drives must be of the exact same size, manufacturer, model and revision as those supplied with the system.

Customer Supplied Accessories

Customers may supply industry-standard devices for the accessories listed below. There should be no problems using non-Avid-supplied devices, but note that Avid is not responsible for the functionality or operation with non-qualified accessories.

- Any standard VGA monitor that supports 640 x 480 resolution and provides a standard 15-pin VGA connector might be used to display the user interface.
- Any standard SCSI-based CD-ROM drive with the appropriate 68-pin HD cable might be used to reinstall or update system software. The following models have been qualified by Avid:
  - Philips® PCA80SC
  - Sony® CDU415
  - Toshiba™ XM-5701B
  - Plextor® 12Plex

Avid will not guarantee the performance of a CD-ROM drive that is not listed above.

- Each AirSPACE system comes with a mouse and keyboard; however, they can be replaced with standard PS/2 compatible keyboards or pointing devices of the customer's choosing.

AirSPACE Support Options

- The Eclipse Option encompasses operational support, SPACE hardware, and the associated software licenses. This includes embedded software, a standard part of the SPACE operating system, plus individual optional products which customers might purchase to further enhance their SPACE products.

  For reference, note that the Avid Limited Warranty includes:

  - One Year Repair / Replacement on SPACE Hardware
  - 90 Days Operational Support
  - 90 Days Maintenance / Upgrades on OS and Embedded Software
  - 90 Days Maintenance / Upgrades on Optional Hardware / Software Products

For the AirSPACE video server, the Eclipse Option is offered in two phases:

- Phase One (ESP-1) extends the Limited Warranty to provide one full year of:
  - Operational Support
  - Software Maintenance and Enhancement releases for the Embedded Software
  - Support and Enhancement releases for Optional Hardware and Software Products
- Phase Two (ESP-2) provides each subsequent year of:
  - Operational Support
  - SPACE Hardware Maintenance including Avid Board Level Exchange
  - Software Maintenance and Enhancement releases for the Embedded Software

- Support and Enhancement releases for Optional Hardware and Software Products

AirSPACE Configurations

The standard Avid AirSPACE video server is equipped with twenty hard drives. Eighteen drives are for media and the file system, one drive is for parity protection, and one drive is a hot-swappable spare.

The system is available in four configurations. For both 525 and 625 systems, nominal storage capacities listed below are based on recording two AES pairs (4 channels) of audio per video channel. Storage capacity is reduced as the number of recorded audio channels increase.

- Model AS12 is equipped with 9 GB (gigabyte) drives. Nominal storage capacity is:
  - 10.78 hours at 25 Mb/s
  - 5.39 hours at 50 Mb/s
- Model AS24 is equipped with 18 GB drives. Nominal storage capacity is:
  - 22.14 hours at 25 Mb/s
  - 11.07 hours at 50 Mb/s
- Model AS48 is equipped with 36 GB drives. Nominal storage capacity is:
  - 45.0 hours at 25 Mb/s
  - 22.5 hours at 50 Mb/s
- Model AS96 is equipped with 73 GB drives. Nominal storage capacity is:
  - 89.79 hours at 25 Mb/s
  - 44.89 hours at 50 Mb/s

- Model AS244 is equipped with 181 GB drives. Nominal storage capacity is:
  - 244 hours at 25 Mb/s
  - 122 hours at 50 Mb/s

The AirSPACE disk array is striped entirely in only one digital format at any given time. Changing the digital format of the array (from 525 to 625) causes all media to be inaccessible. When the change request is made, a message box appears alerting you and allowing you to cancel the procedure. You can not intermix 525/60 and 625/50 or DV25, DV50, and IMX50 striping on a disk array.

CHAPTER 2

Installation

This chapter describes the AirSPACE video server's hardware, and provides comprehensive instructions for hardware installation, software installation and system "power-up" procedures.

The following topics are discussed:

- Hardware Description
- Hardware Installation
- System Interconnection
- Power Up, Power Down

Hardware Description

The following topics are discussed in this section:

- Front Chassis
- Rear Chassis
- Breakout Panel

Front Chassis

Figure 2-1 illustrates the front of the AirSPACE chassis with the door opened. The door may be removed by releasing the pins that secure the hinge, however, in order to comply with emissions regulations, the system should be operated with the door in place and latched closed.

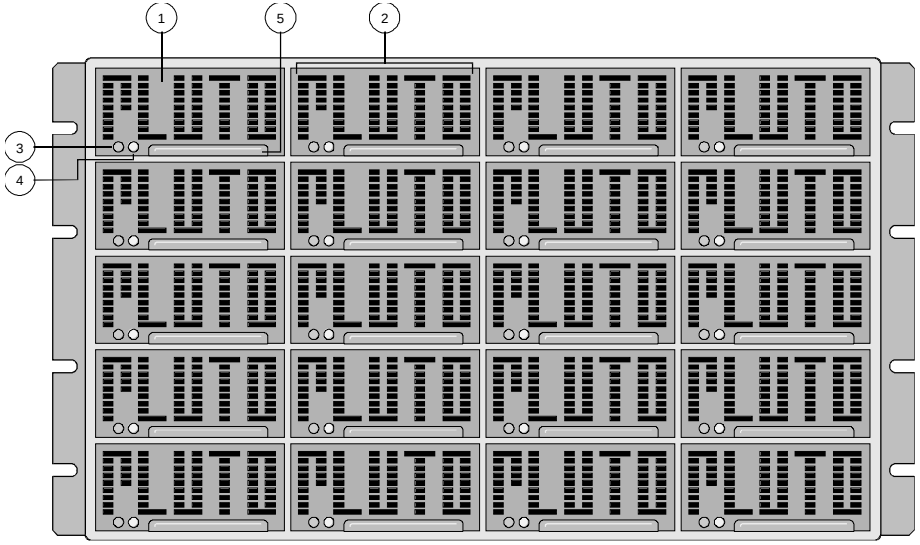


Figure 2-1 Front Chassis

The following descriptions refer to the circled numbers above.

1. SPACE Pod

   Each SPACE Pod (Avid's drive mounting, shock absorber and connector assembly) houses one disk drive. Twenty hard drives are provided.

Figure 2-2 illustrates the drive designations:

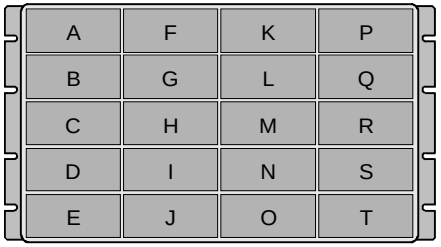


Figure 2-2 Drive Designations

- 18 drives for media and file system (drives A through R)
- 1 drive for parity protection (drive S)
- 1 drive for a hot-swappable spare (drive T)

The system is shipped with the parity drive in slot S and the spare in slot T, however these locations are dynamic and will change over time. In the event of a failure, the spare automatically replaces the failed drive and the user should insert a new hot spare in the failed location.

2. Vents

   Functional air holes in *each* SPACE Pod faceplate provide vents for cooling. To maintain proper drive temperature, do not block the vents.

3. Blue LED

   The Blue LED, when lit by itself, indicates that the disk drive is operating correctly and configured into the array. See the following notes for LED information.

4. Red LED

   The red LED, when lit steadily (not blinking, blue LED not also lit), indicates a disk fault. See the following notes for LED information.

5. Handle

   The SPACE Pod Handle provides a finger-hold for removal of the drive.

Please note the following important points regarding the disk drive LEDs:

- When a drive has developed an unrecoverable fault, the system will automatically take the drive off line and light the drive's red LED.
- If the system has a hot spare drive installed, it will immediately begin rebuilding data on the hot spare, lighting both LEDs on that drive.

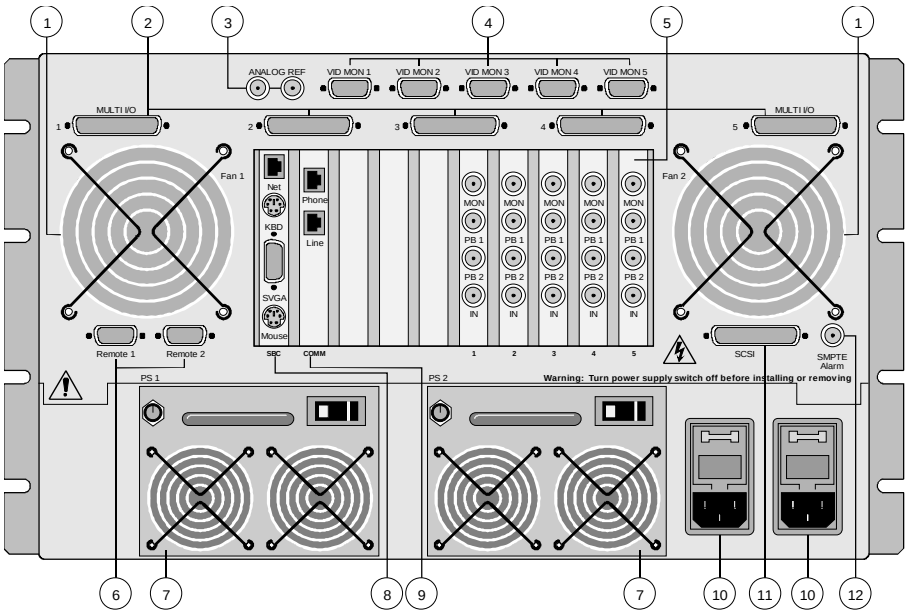
The spare drive has no LEDs lit until it is used by the system to repair a failed drive.

- If the system does not have a hot spare drive installed, it will indicate the hardware fault condition identifying "No Spare Disk."
- Hardware faults are indicated by via the SMPTE alarm. If the fault is due to a drive failure, only that drive's red LED will remain on steadily.
- When both LEDs are lit simultaneously, data is being rebuilt onto that drive.

It is strongly recommended that you do not shut the system down during rebuilds - permanent data loss could result.

Rear Chassis

Figure 2-3 illustrates the rear chassis of the AirSPACE video server.



1. Cooling Fans
2. Multi I/O Connectors
3. Analog Reference
4. Video/Monitor Connectors
5. ACV Boards
6. Spare Remote Connectors
7. Redundant Power Supplies
8. SBC Board
9. Modem Board
10. AC Connections
11. SCSI Connector
12. SMPTE Alarm

Figure 2-3 Rear Chassis

The AirSPACE video server chassis contains the system board, disk drive array and all required system electronics. All “local” connections, fans, power supplies, and plug-in boards are designed for easy removal and insertion from the rear chassis.

The following descriptions refer to the circled numbers above.

1. Cooling Fans

There is an additional fan inside the chassis that is not accessible from the rear of the chassis.

Six cooling fans (two upper main fans plus two per power supply) are provided for optimum chassis airflow, from front to rear. To maintain proper temperature, do not block the fans or airflow through the front. A minimum clearance of 6 inches (15.25 cm) is recommended.

2. Multi I/O Connectors

Five 78-pin high-density I/O connectors are provided for interconnection with (up to) five breakout panels.

Each numbered I/O connector is associated with the similarly numbered ACV board and video/monitor connector, and each carries the following signals to its associated breakout panel:

- RS-422 remote ports 1 and 2
- General Purpose Interface connections (8 in, 4 out)
- LTC input and output connections
- Analog audio monitor output connections (1-8)
- AES digital audio input and output connections (1/2, 3/4, 5/6, 7/8)

For additional details, see Appendix 2“Breakout Panel” on page 2-10.

3. Analog Reference

Two BNC connectors are provided for RS-170A analog house reference. Either BNC connector can be used as the reference input, while the other can be used as a passive loop to the next video device in the chain, or terminated with a 75 Ohm terminator.

4. Video / Monitor Connectors

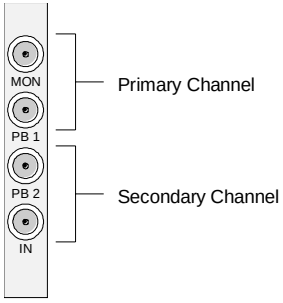
   Five 15-pin high-density connectors are provided for interconnection with (up to) five breakout panels. Each numbered video / monitor connector is associated with the similarly numbered ACV board and Multi I / O connector. Each video / monitor connector carries the following signals to its associated breakout panel:

   - One component video output (the format is switchable on the GUI between Y / Pb / Pb, G / B / R and Comp / Y / C).
   - Two composite monitor outputs

   For additional details, see Appendix 2“Breakout Panel” on page 2-10.

5. ACV Boards

   Five slots are provided for up to five identical ACV (Audio / Compressed Video) boards. Systems may be equipped with anywhere from one to five boards. Each board is divided into a primary and secondary channel.



   The primary channel is dedicated to Playback. The secondary channel is dedicated for Record Only.

The following signals are provided:

Primary Channel: Playback Only

- The PB 1 connector provides the primary channel's SDI video playback signal.
- The MON connector provides an analog monitor composite output. This signal is an analog conversion of the digital PB 1 signal.

Two composite outputs are provided on the associated breakout panel.

Secondary Channel: Record Only

- The PB 2 connector provides the secondary channel's SDI video loopthrough signal.
- The IN connector accepts the primary channel's SDI video input signal (record input).

The secondary video channel is dedicated to Record Only.

6. Remote Connectors

   The main chassis Remote 1 and Remote 2 connectors are provided for other software products and are not used in AirSPACE.

7. Redundant Power Supplies

   Two standard current-sharing live-swappable redundant power supplies (PS 1 and PS 2) are provided. Either supply can run the chassis by itself, in the event the other supply fails. Each power supply has its own power switch. Refer to Appendix B, for important information about changing power supplies.

To obtain the benefit of redundant power supply protection, both power supplies must be plugged into an appropriate power source and turned on. If this is not done, the system will display an Alert Warning.

8. SBC Board

All system activity is controlled by the SBC (Single Board Computer). This board is a commercial Pentium III controller in a standard plug-in format. The following four connections are provided:

- The Ethernet connector (RJ-45) provides a 100/10 BaseT Ethernet connection for networking. The system automatically senses whether it is connected to a 10 Mb or 100 Mb network.

This Ethernet connector should be used on AirSPACE Systems without the Gigabit Ethernet option (i.e. when no GigE Network Interface Card is present). A Fiber-optic 1000 BaseSX connector for GigE connection appears in the first blank slot shown when this option is installed. When GigE is installed, do not use the 10/100 connection on the SBC.

- The keyboard port accepts a standard PS/2 compatible keyboard (6-Pin mini "DIN"), for direct control in conjunction with the AirSPACE user interface.
- The SVGA connector (15-Pin "D" female) is provided for connection to a display monitor (for the AirSPACE GUI). The output is a 640 x 480 pixel graphic containing all user controls.
- The mouse port accepts a standard PS/2 compatible mouse (6-Pin mini "DIN" connector), for direct control in conjunction with the user interface. The port can also be used with a trackball or other compatible pointing device.

9. Modem Board

   One of two different modem configurations is provided for remote connection capability:

   For non-CE countries, a standard modem connection is included on a plug-in ISA board.

   - The Phone connector can be connected to a standard phone (optional).
   - The Line connector is connected to an analog phone line.

   For CE countries, a serial adapter board is provided for connection to a *customer-supplied* external modem.

10. AC Connections

    Two AC power connectors are provided, one for each associated power supply. The left-hand connector is associated with PS 1; the right-hand connector is associated with PS 2. Each power connector accepts 100 to 240 Vac, 50/60 Hz, auto ranging. Two IEC to US 3-prong plugs are supplied with each unit. In international applications, the customer must provide the appropriate power cabling.

11. SCSI Connector

    The SCSI connector is an external Wide UltraSCSI single-ended connection for interfacing with Avid's CD ROM option. The SCSI connector has its own controller with SCSI ID 20. Software updates are provided via CD ROM in addition to modem/internet downloads.

12. SMPTE Alarm

    One BNC connector is provided for the SMPTE alarm (SMPTE 269M). The alarm provides a contact closure output whenever a hardware fault exists in the system (including a failed drive or power supply, or a detected fault in other circuitry). Note that this contact is closed when power is off.

Breakout Panel

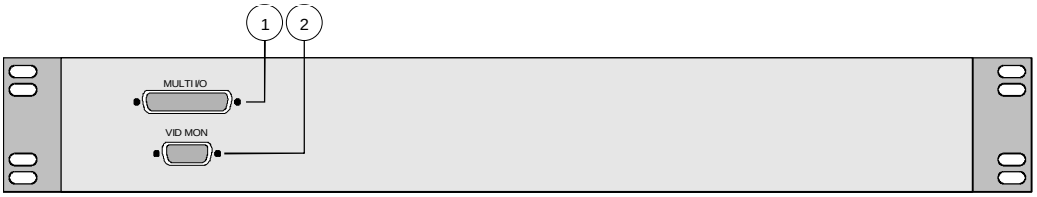
The following topics are discussed in this section:

- Rear Breakout Panel
- Front Breakout Panel

One breakout panel is supplied with each ACV board in your AirSPACE system. Each 1.5 RU panel connects to the chassis via two multi-pin cables.

Rear Breakout Panel

Figure 2-4 illustrates the rear of the breakout panel.



1. Multi I/O Connector 2. Video/Monitor Connector

Figure 2-4 Rear Breakout Panel

The following descriptions refer to the circled numbers above.

1. Multi I/O Connector

   The 78-pin high-density connector provides an interconnection to the associated Multi I/O connector on the rear chassis. Connections for the associated ACV board's audio, time code, RS-422 and GPI signals are provided. See the following descriptions of the front panel connectors for details.

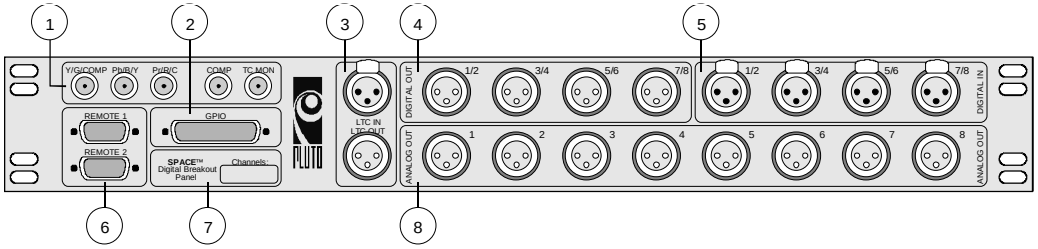
2. Video/Monitor Connector

   The 15-pin high-density connector provides an interconnection to the associated video/monitor connector on the rear chassis. Connections for the associated ACV board's component and composite video signals are provided in Appendix A. See the following descriptions of the front panel connectors for details.

This Video/Monitor connection is wired the same as a computer VGA connector, allowing the use of a commercially available 5 BNC computer video cable instead of the breakout box if desired.

Front Breakout Panel

Figure 2-5 illustrates the front of the breakout panel.



1. Video Section
2. GPI Connector
3. Timecode Connectors
4. Digital Audio Out Connectors
5. Digital Audio In Connectors
6. Remote Connectors
7. Label Section
8. Analog Audio Out Connectors

Figure 2-5 Front Breakout Panel

The Remote 1 connector and all outputs are associated with ACV board's primary channel (playback). The Remote 2 connector, the LTC IN connector and the Digital In connectors are all associated with the secondary (record) channel of the ACV board. The following descriptions refer to the circled numbers above.

1. Video Section

   Five connectors are provided in the Video section:

   - Three component video output connectors provide a component video output of the ACV board's PB 1 signal. The component video format is switchable between Y/Pb/Pr or R/G/B using the GUI (see configuration section).

   - The COMP and TC Mon connectors provide a composite video monitoring output of the ACV board's PB 1 signal.

TC Mon output is actually a second composite output. There is no overlaid timecode.

2. GPI Connector

   The GPIO connector provides pins for 12 assignable system control ports (8 GPI inputs, 4 GPI outputs). For connector pinouts, see "GPI" on page A-12.

3. Time Code Connectors

   Two connectors are provided for longitudinal time code:

   - The LTC IN connector accepts time code input when the associated ACV board's secondary channel is recording.
   - The LTC OUT connector provides time code output when the associated ACV board's primary channel is playing back.

4. Digital Output Connectors

   Eight AES digital output channels (4 AES/EBU pairs) are provided, with 16 or 24-bit sampling at 48 KHz. All eight channels are associated with the ACV board's primary playback channel (PB 1).

Each ACV board provides four AES audio output channels only (2 AES pairs, 1/2, 3/4).

5. Digital Input Connectors

   Eight AES digital input channels (4 AES/EBU pairs) are provided, with 16 or 24-bit sampling at 48 KHz. All eight channels are associated with the ACV board's secondary record channel (IN).

Each ACV board provides for four AES audio input channels only (2 AES pairs, 1/2, 3/4).

6. Remote Connectors

   Two RS-422 remote control ports are provided for connection to automation systems, and also support industry standard VTR control protocols:

   - The REMOTE 1 port provides automation control for the associated ACV board's primary channel (playout) when configured for VDCP Protocol.
   - The REMOTE 2 port provides automation control for the associated ACV board's secondary channel (ingest) when configured for VDCP Protocol.

- Both REMOTE 1 and REMOTE 2 are active for the full ACV card when configured for Sony protocol. Two RS-422 devices may be connected, the last command received wins.

7. Label Section

   The Label section provides an area in which you can write the channel designations for the associated ACV board.

8. Analog Audio Out Connectors

   Eight analog output channels are provided for monitoring the associated ACV board's primary playback channel.

Only four analog audio monitoring channels (1-4) are active on the breakout panel. Analog audio levels are not adjustable. For the correct level, outputs should be terminated in 600 ohms.

Hardware Installation

This section provides instructions for installing the AirSPACE video server's hardware. The following topics are discussed:

- What You Will Need
- Unpacking and Inspection
- Installation

What You Will Need

The following list outlines the items that are required (and recommended) for proper AirSPACE system operation:

- Electronics and Hardware
  - The AirSPACE video server chassis is required.
  - For rack mounting support, standard rack ears are provided on each AirSPACE chassis (8 customer supplied rack mount screws are required). Additional customer supplied rack support as noted is also required.

The use of rack L-brackets, a rack shelf, or other appropriate customer-supplied rack support hardware is required — the weight of an AirSPACE array can not be supported by its rack ears alone.

Rack "slides" are not required as all sub-assemblies can be removed for service with the AirSPACE unit in place.

- Monitoring and Control
  - VGA monitor is required for viewing the user interface. Use the Avid VGA Monitor accessory or other appropriate 640x480 VGA display.
  - PS/2 keyboard and PS/2 mouse are supplied with each unit, and are required to access user interface items.

Do not plug or unplug the mouse or keyboard with the power on.

- CD ROM and SCSI Cable
  - A CD ROM drive and associated SCSI cable are required for software updates. For important CD ROM information, see “Connecting the CD ROM” on page 4-31.
- Interconnect Cables (customer supplied)
  - Video coaxial cable rated for digital video transmission.
  - Video coaxial cable rated for analog video transmission.
  - Audio cable rated for analog audio transmission (required for monitoring connections and LTC time code connections).
  - Audio cable rated for digital audio transmission. In order to reduce excessive emissions, Avid recommends using Belden 1696 AES / EBU, 110Ω digital audio cable to connect the AES digital connections to and from the breakout panel.
  - RS-422 9-Pin “D” serial interconnect cables.
  - GPI 25-Pin “D” interconnect cable (if desired).
  - Ethernet RJ-45 cables and the appropriate Ethernet network.
- Input Sources
  - A digital video input source is required.
  - An analog video reference source is required.
  - An LTC input source is optional for use when preferred, or when VITC is not available.
  - A digital audio input source is required.
- Power

  Dual Power entries (one for each power supply) are provided to allow connections to independent grids where available (both connections should be connected to the same power source when not available).

A stable power source must be provided. Be sure to avoid power lines that are subject to noise and voltage spikes.

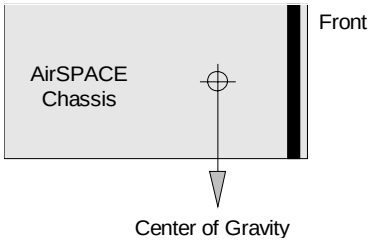
Due to the nature of disk-based systems, the most recent data (i.e., the last written frames) might be lost if power fails. It is therefore strongly recommended that you use an uninterruptable Power Supply (UPS) with AirSPACE.

Unpacking and Inspection

Unpack the AirSPACE system and inspect all shipping cartons for signs of damage. Contact Avid and the shipper immediately if you suspect that damage has occurred in transit.

Check that you have received all standard and optional system components. If any items are missing, please contact Avid immediately.

Each AirSPACE chassis can weigh up to 160 pounds (73 kilograms). When unpacking and inspecting the system, be aware that the chassis is front heavy due to the placement of the drives.



Due to the weight of the product, do not ship the AirSPACE system in anything but the original shipping container, and strapped to the supplied pallet.

It is recommended that you retain the original packing material in the event that the unit needs to be returned or shipped elsewhere.

List of Materials

Table 2-1 lists the standard items that are shipped with each AirSPACE video server unit:

Table 2-1 AirSPACE Standard List of Materials

Quantity	Description
1	AirSPACE chassis with all drives and software installed
1	Chassis door
2	IEC Power Cord (for use with U.S. standard power), 6'
1	AirSPACE Installation and User's Guide
1	PS/2 type computer keyboard
1	PS/2 type computer mouse, 2-button
4	Fuse, UL/CSA Slo-Blo, 3AB, 10A, 250V
1	Fuse Instructions
6	Fuse, IEC 127 5 x 20mm Type T Sheet III, 4A, 250V
1	RJ-11 Modem Cable, 4 Pos, 10' (U.S. only)

If you have ordered the optional **breakout panel** for an ACV board, Table 2-2 lists the items that are shipped with *each* panel. If you have ordered *three* **breakout panels**, for example, you will receive *three sets* of the following parts:

Table 2-2 Breakout Panel List of Materials

Quantity	Description
1	AirSPACE Digital Breakout Panel Assembly
1	78-pin High-density Multi I/O Cable, 10'
1	15-pin High-density Video/Monitor Cable, 10'
1	RS-422 Cable, 25'

Installation

This section provides instructions for hardware installation. The following topics are discussed in detail:

- Checking Drives After Shipment
- Rack Mounting
- Connecting Video Cables
- Connecting Audio Cables
- Connecting Control and Communications Cables
- Connecting Power
- Installing and Removing Disk Drives

When installing system equipment, always observe these important safety and handling precautions.

- Follow all standard anti-static precautions.
- Avoid temperature and humidity extremes.
- Provide adequate ventilation and sufficient space for cables. To maintain proper temperature, do not block the rear fan exhaust or the front door, and allow at least 6” of clearance behind the AirSPACE unit.
- If you need to handle the disk drives or the internal boards, use appropriate Static Protection equipment ant procedures.
- Always hold boards by the edges — do not touch the chips.

Checking Drives After Shipment

Transportation and shipment of the AirSPACE video server might cause the disk drives to shift or become unseated. Before proceeding with installation (and particularly, before powering up the AirSPACE unit) ensure that all disk drives are fully seated in the chassis by checking that each pod faceplate is flush with adjacent drives, and properly positioned between the protruding tabs on either side. This step will ensure a good electrical connection for each drive.

Rack Mounting

The AirSPACE chassis is too wide to accommodate most rack slides. Therefore (in addition to the supplied rack ears) a pair of L-brackets (or other appropriate hardware) are required to support the weight of the chassis.

The AirSPACE chassis can weigh up to 160 pounds (73 kg), and the bulk of the weight is towards the front of the box.

Observe the following precautions when rack mounting the unit:

- At least two people should be present when moving the system.
- A third person should be stationed behind the rack.
- Do not allow the unit to overhang the mounting hardware without proper support — without this support, the unit or the entire rack could tip over.

To install the AirSPACE video server chassis in a rack:

1. In your equipment rack, allow a minimum of six rack units for the AirSPACE chassis (10.50 inches or 26.67 centimeters).
2. Install a pair of L-brackets at the bottom of the assigned space, and completely secure the brackets to both the front and rear rack rails.
3. Set the AirSPACE chassis on top of the brackets, and slide it forward into the rack.
4. Secure the chassis to the rack with standard rack-mount hardware — four screws on each side of the chassis.

To install a breakout panel in a rack:

1. In your equipment rack, allow 1.5 rack units of space for each breakout panel. Because of the extra mounting holes, these special 1.5 rack unit modules may be mounted where convenient to rear rack rails and can be stacked with no space between adjacent panels. The selected position must be within 3 meters of the AirSPACE chassis.
2. Install the breakout panel in the rack, and secure it with standard rack-mount hardware.
3. Repeat steps 1 and 2 for each breakout panel in your system.

Connecting Video Cables

See the Video Connection Diagrams in “System Interconnection” on page 29 for assistance with the following procedure.

To connect video cables on the chassis:

1. Ensure that you have the proper analog-rated and digital-rated video coaxial cables available.
2. Connect a composite video reference source to one of the two ANALOG REF input connectors. If the AirSPACE chassis is the last device in your reference loop, terminate the remaining reference connector with a 75Ω terminator. If the chassis is in the *middle* of your reference loop, connect the remaining reference connector to the next device’s reference input.
3. On the first ACV board in your system, connect the following signals:

   Primary Channel:

   - Connect the PB 1 digital output connector to the input of the desired destination.
   - Connect the MON connector (analog monitor output) to the input of the desired destination, such as a composite analog video monitor or analog distribution amplifier).

   Secondary Channel:

   - Connect a digital video input source to the IN connector (record input).
   - Connect the PB 2 connector (digital loop-through) to the input of the desired destination, such as a digital monitor).
4. Repeat step 3 for *each* ACV board in your system.

To connect video cables on the breakout panel:

1. Ensure that the selected breakout panel and its associated ACV board are correctly identified. If not, please label the Breakout panel accordingly in the panel's Label section.
2. Connect the three analog component video output connectors (Y / G / COMP, Pb / B / Y, Pr / R / C) to the desired analog component video destination. For instructions on selecting the desired component video format, see "Selecting a Playout Channel's Analog Output" on page 4-21.
3. Connect the COMP connector (primary channel composite output) to the desired composite analog destination.

TC MON output does not support burned-in timecode.

4. Connect the TC MON connector (additional primary channel composite output) to the desired composite analog destination.
5. Repeat steps 1 through 4 for each breakout panel in your system.

Connecting Audio Cables

See the Audio Connection Diagrams in "System Interconnection" on page 29 for assistance with the following procedure.

To connect time code cables on the breakout panel:

1. Ensure that the selected breakout panel and its associated ACV board are correctly identified. If not, please label the Breakout panel accordingly in the panel's Label section.
2. Ensure that you have the proper analog audio cables available.
3. Connect the desired LTC time code source to the LTC IN connector.
4. Connect the LTC OUT connector to the desired LTC time code destination device.
5. Repeat steps 1 through 4 for *each* breakout panel in your system.

To connect audio cables on the breakout panel:

1. Ensure that the selected breakout panel and its associated ACV board are correctly identified. If not, label the Breakout panel accordingly.
2. Ensure that you have the proper analog-rated and digital-rated audio cables available.
3. Connect the two DIGITAL IN connectors 1/2 and 3/4 (5/6 and 7/8 are currently unused) to the desired AES digital audio source.
4. Connect the four DIGITAL OUT connectors to the desired AES audio destination.
5. Connect the eight ANALOG OUT connectors (channels 1 through 8) to the desired analog audio destination or monitor.

Only four analog audio monitoring channels (1-4) are active on the breakout panel. However, you may want to pre-cable the remaining connectors at this time.

6. Repeat steps 1 through 5 for *each* breakout panel in your system.

Connecting Control and Communications Cables

See the Communications Connection Diagrams in "System Interconnection" on page 29 for assistance with the following procedure.

To connect control and communications cables on the chassis:

1. Ensure that you have the proper control and communications cables and equipment available.
2. Connect the Avid mouse or a standard PS/2 compatible mouse to the mouse connector.
3. Connect the Avid keyboard or a standard PS/2 compatible keyboard to the KBD connector.

4. Connect the Avid VGA monitor (provided with the Avid VGA user interface monitor accessory) or a standard VGA monitor to the SVGA connector.
5. For external communications (when telephone support is required), use the appropriate procedure below:
   - For non-CE countries, connect the Line connector (on the Modem board) to a standard analog telephone line.
   - For CE countries, connect your customer-supplied modem to the Serial Adapter board's standard 25-Pin or 9-Pin "D" serial connector. Note that the Serial Adapter board will be located in the Comm board slot for CE-specific systems.

It is only necessary to be connected to a phone system when software updates, diagnostics, or feature enabling activities are to be conducted via phone lines.

6. Connect the CD ROM drive or other SCSI peripheral device to the SCSI connector. For additional information, see "Connecting the CD ROM" on page 4-31.

It is only necessary connect a CD ROM Drive when software updates via a CD ROM Distribution are to be installed.

7. Connect the SMPTE Alarm connector to your facility SMPTE Alarm loop or other contact closure activated alarm system.
8. Connect a 10 BaseT or 100 BaseT Ethernet RJ-45 connector with CAT-5 cable from the NET connector to an available Ethernet hub. Alternately, connect an appropriate Fiber-optical cable from the Gigabit Ethernet Network Interface Card to an available GigE Switch if installed.

If the AirSPACE system is connected to only a single additional device (for example, a network with a single node at each end), no hub is required when using Gigabit Ethernet.

9. Connect a 78-pin high-density interconnect cable from the first chassis MULTI I/O connector to the MULTI I/O connector on the

associated breakout panel. One interconnect cable is supplied with each breakout panel.

10. Connect a 15-pin high-density interconnect cable from the first chassis VID MON connector to the VID MON connector on the associated breakout panel. One interconnect cable is supplied with each breakout panel.

The Remote 1 and Remote 2 connectors on the array chassis are not used for standard AirSPACE models.

To connect control and communications cables on the breakout panel:

1. Ensure that the selected breakout panel and its associated ACV board are correctly identified. If not, label the Breakout panel accordingly.
2. Connect the GPIO connector to the desired destination GPI input and output devices. Refer to “GPI” on page A-12 for GPI connector pinouts.
3. Connect the REMOTE 1 and REMOTE 2 connectors to the desired RS-422 device, such as an automation system or edit controller:
    - The REMOTE 1 port is normally used for remote control capability for the associated ACV board’s primary channel when configured for VDCP protocol
    - The REMOTE 2 port is normally used for remote control capability for the associated ACV board’s secondary channel when configured for VDCP protocol

Automation systems can in fact access any VDCP configured input or output channel from any Remote connector also so configured. We recommend for ease of troubleshooting that users physically connect to the appropriate Remote port as described above.

    - Either REMOTE port may be used when the channel is configured for Sony protocol

4. Repeat steps 1 through 4 for *each* breakout panel in your system.

Connecting Power

Two (2) U.S. IEC power cords are shipped with the AirSPACE video server. If your local power distribution is not compatible with the supplied cord, you must provide your own IEC power cable that is compatible with your country's power system.

To connect power:

1. Ensure that the power switches on the power supplies are in the "Off" position.
2. Attach the two supplied U.S. style IEC line cords to each power receptacle (one for PS 1; one for PS 2). Please note:
   - Ensure that the line cords are compatible with the electrical system to which the unit is to be powered.
   - If your electrical system requires a different power connector, you must supply your own appropriate power-to-IEC line cords.
3. Connect the Power connectors to a stable power source. Be sure to avoid power lines that are subject to noise and voltage spikes. Each power connector accepts 100 to 240 Vac, 50/60 Hz.

Installing and Removing Disk Drives

In the event that you need to remove a failed disk drive and replace it with a spare, the following procedures can be used.

The RAID system maintains data integrity for only one failed drive. If you remove two drives (or if a drive fails and you remove a different one), you might experience a loss of data. When there is a problem with the RAID system, a flashing pattern of lights across all drives (the SMPTE Alarm) is activated.

Ignore the flashing pattern when looking for the following three conditions:

- Drives with blue LEDs on (only) are working properly and should not be removed under normal circumstances.
- Drives with red LEDs on (only) have been identified as failed and should be removed and replaced as soon as possible.
- Drives with both LEDs on are being rebuilt and should not be removed.

To remove disk drives:

1. Throughout the removal process, handle all drives with the appropriate static protection procedures.
2. Open the system's front door by turning the two screw-operated latches counterclockwise — by 1/2 turn.
3. Grasp the desired drive by the small handle on it's lower lip, and pull firmly to extract the drive. Wait until the drive stops spinning before fully extracting. It is sometimes helpful to 'lever' the drive out by placing both thumbs against the surface below the drive being removed.

If a drive is being sent directly to the drive manufacturer for pass through warranty, unmount the drive from the SPACE Pod by removing the 4 screws on the bottom, then disconnecting the power and signal connectors. Note that the drive manufacturer will not return your SPACE Pod.

To install disk drives:

1. Throughout the installation process, handle all drives with the appropriate static protection procedures.
2. Slide the replacement drive (properly mounted to the SPACE Pod) into the empty slot.
3. Push the front of the SPACE Pod firmly in until the drive is fully seated. Ensure that the faceplate is flush with adjacent drives, and properly positioned between the protruding tabs on either side.
4. Close the front door and latch it by turning the two screw-operated latches clockwise by 1/2 turn.

If a drive is not supplied by Avid (and therefore not installed on a SPACEPod, you must ensure that it is jumpered correctly and that it is supported by the system. For a list of supported drives, contact Customer Support.

System Interconnection

To assist with the connection of your AirSPACE system, this section includes the following interconnection diagrams:

- Chassis Video Connection
- Breakout Panel Video Connection
- Breakout Panel Audio Connections
- Chassis Communications Connections
- Breakout Panel Communications Connections

Chassis Video Connection Diagram

Use the following diagram for reference with video connection procedures on the chassis. Peripheral video components are shown for illustration purposes *only* — your specific video configuration might differ.

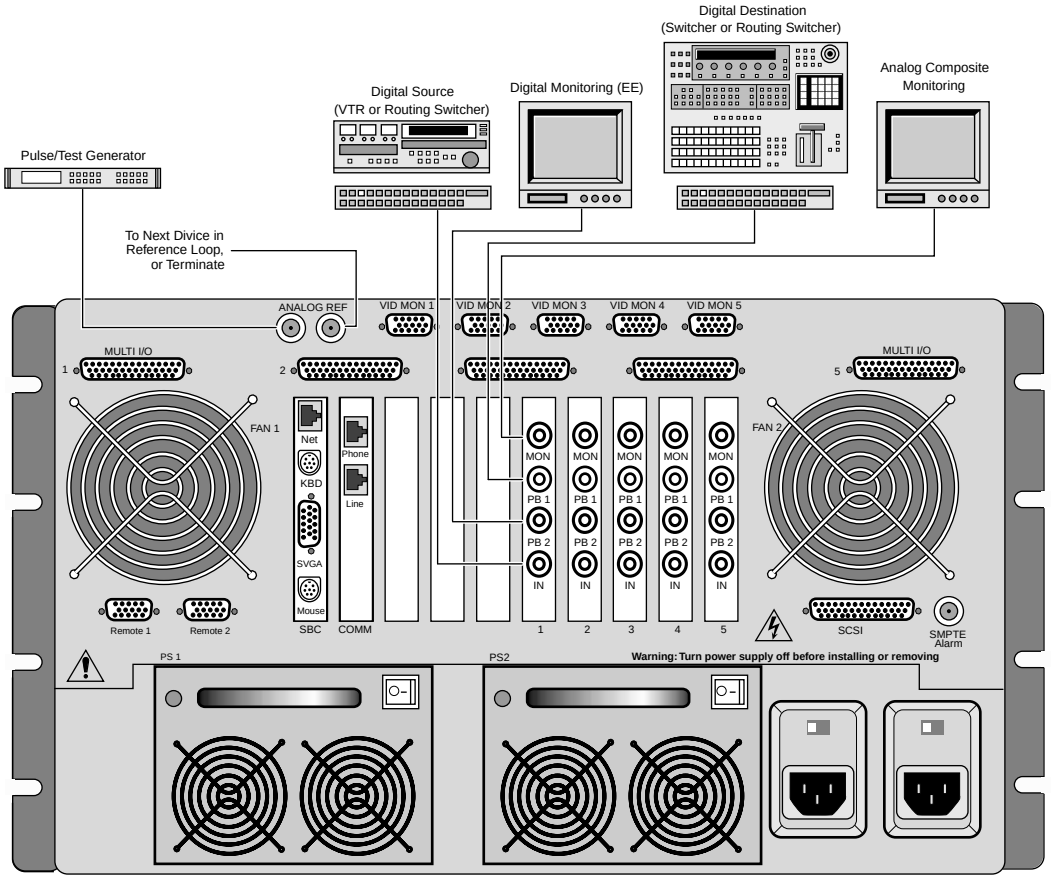


Figure 2-6 Chassis Video Connection Diagram

Note that a single set of video connections are shown to the first ACV board in the system above. Repeat these connections for *each* ACV board in your system as required.

Breakout Panel Video Connection Diagram

Use Figure 2-7 for reference with video connection procedures on the breakout panel. Peripheral video components are shown for illustration purposes only — your specific video configuration might differ.

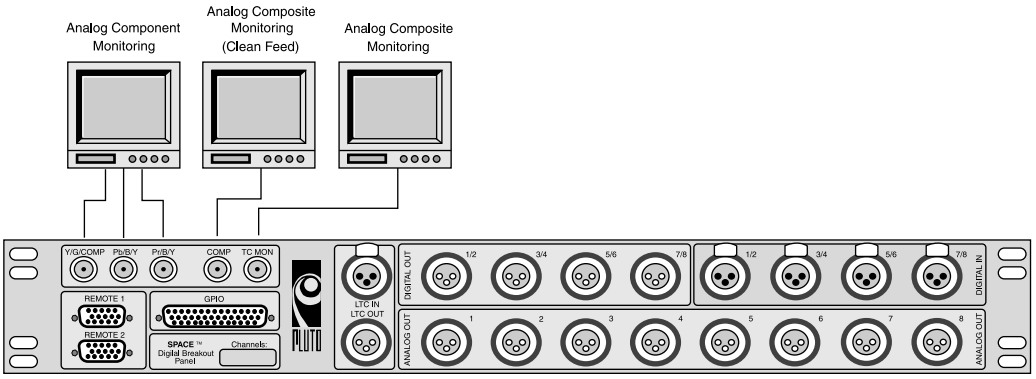


Figure 2-7 Breakout Panel Video Connection

Note that video connections are shown to *one* breakout panel in the system above. Repeat these connections for *each* breakout panel in your system as required.

Breakout Panel Audio Connection Diagram

Use the following diagram for reference with all audio connection procedures on the breakout panel. Peripheral audio components are shown for illustration purposes only — your specific audio configuration might differ.

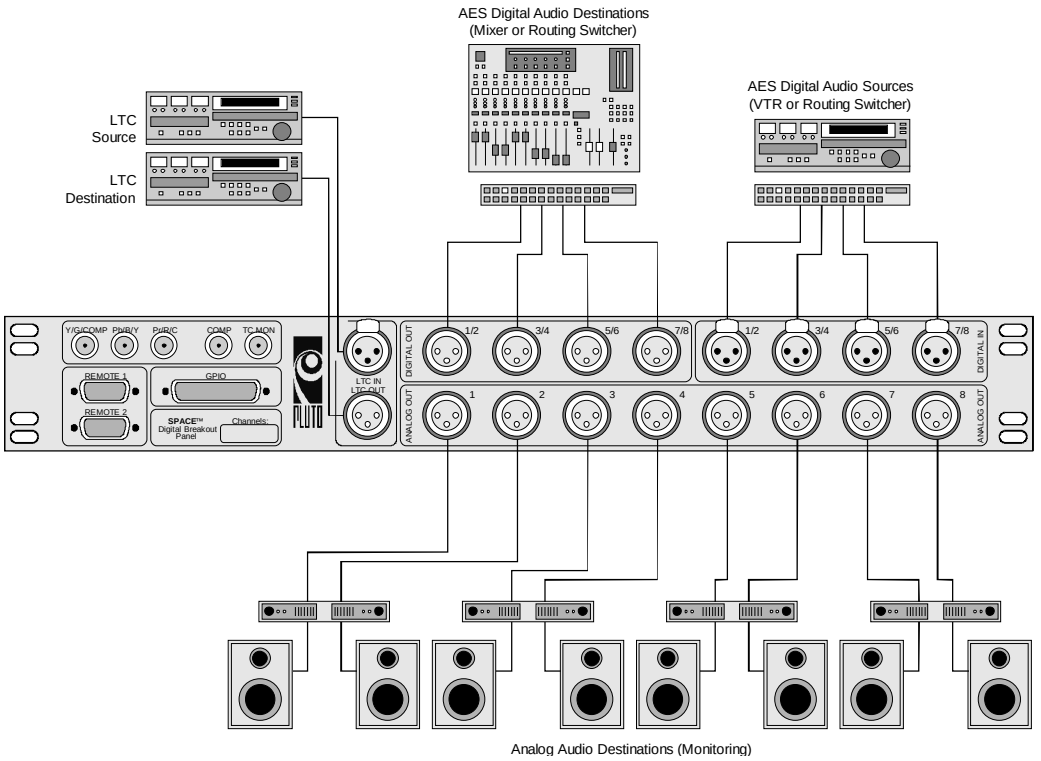


Figure 2-8 Breakout Panel Audio Connection

Note that audio connections are shown to *one* breakout panel in the system above. Repeat these connections for *each* breakout panel in your system as required.

Chassis Communications Diagram

Use the following diagram for reference with all control, communications, and power connection procedures on the Chassis. Peripheral control and communication components are shown for illustration purposes only.

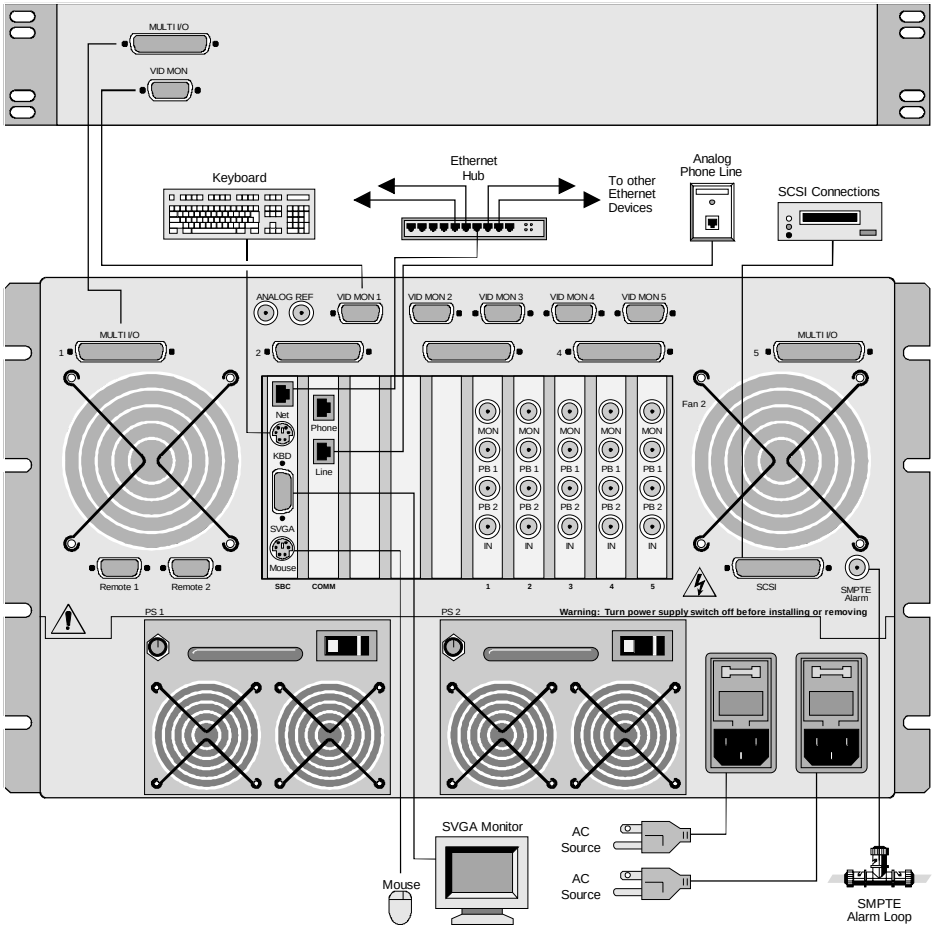


Figure 2-9 Chassis Communications

Control connections are shown in Figure 2-9 from the chassis to the first breakout panel in the system. Repeat the chassis-to-breakout panel connections for each breakout panel in your system.

Breakout Panel Communications Diagram

Use the following diagram for reference with all control and communications procedures on the breakout panel. Peripheral control and communication components are shown for illustration purposes only.

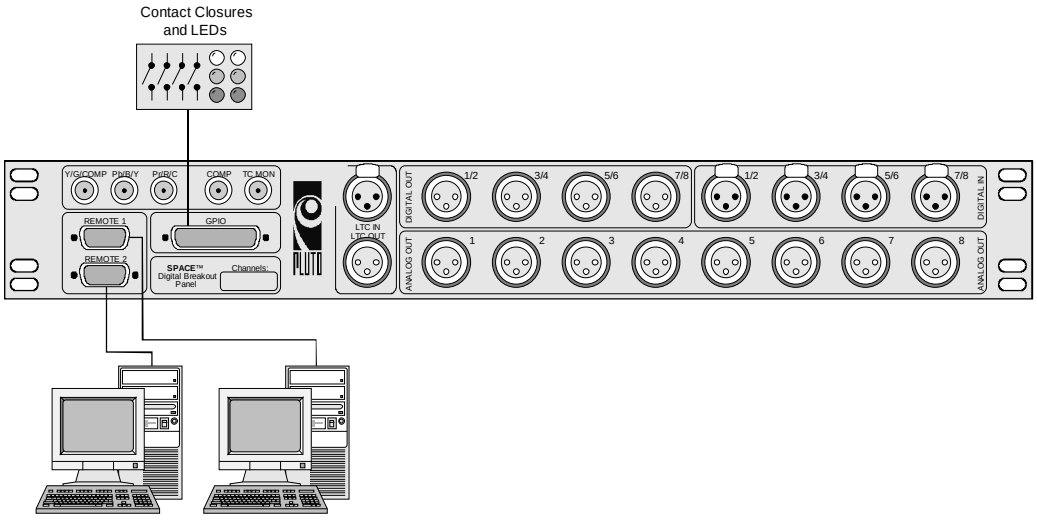
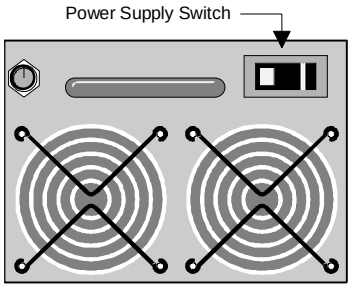


Figure 2-10 Breakout Panel Communications

Power Up, Power Down

To power up the AirSPACE video server system:

1. Turn on the two AirSPACE power supplies. Switches are located on the power supplies themselves on the rear chassis panel.

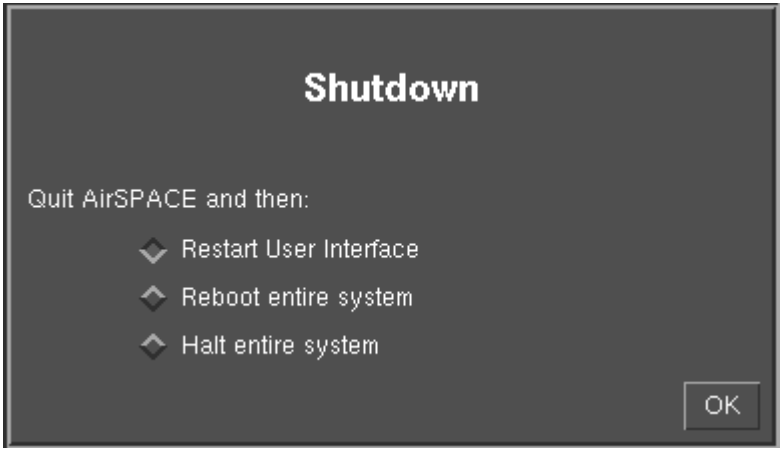


2. Turn on the VGA display monitor.
3. When the user interface appears (this takes from 2 to 3 minutes), the system is ready for operation.

To power down the AirSPACE system:

1. Click the Menu Select button, then select Shutdown from the pop-up list.

   The Shutdown dialog box appears.



   Select the desired shutdown mode:

   - Click Restart User Interface to restart the GUI only.
   - Click Reboot entire system to reboot both the system and the GUI.
   - Click Halt entire system to perform a complete shutdown. A variety of internal tasks such as file system clean-up will be performed, and the operating system will then shut down.

2. Click OK to perform the selected shutdown operation.
3. Turn off peripheral equipment as required.

CHAPTER 3

User Interface

This chapter introduces the AirSPACE user interface, and provides detailed descriptions of all user interface sections and controls.

The following major topics are discussed:

- Introduction to the AirSPACE User Interface
- Dashboard
- Controls Menu
- Status Bar
- Record / Monitor Application
- Record Application
- Playlist Application
- SPACE Shift Application
- Playlists Menu
    - Playlist Builder
    - Event Database
- System Diagnostic Menu

For operating instructions on all system modes and features, see Chapter 5, “AirSPACE Operations. “

Introduction to the AirSPACE User Interface

Figure 3-1 illustrates the AirSPACE user interface, with a sample Controls menu selected.

1. Dashboard 2. Workspace 3. Scroll Bar

Figure 3-1 AirSPACE User Interface

The following descriptions refer to the numbers above.

1. Dashboard

   The Dashboard provides a control panel which is always present at the bottom of the user interface. It allows you to access all AirSPACE menus, and also provides the internal AirSPACE clock

and disk usage status. For additional details, see “Dashboard” in the following section.

2. Workspace

   The Workspace area changes depending upon the menu button that you select in the Dashboard. This area is reserved for your record and playback applications, for designing playlists, and for setting up all AirSPACE system parameters.

3. Scroll Bar

   The scroll bar appears when additional vertical space is required in the Workspace. Use in the normal manner.

Dashboard

Figure 3-2 illustrates the AirSPACE Dashboard.

1. Menu Select Button
2. Time of Day Display
3. Reference Status Indicator
4. Machine Name
5. Disk Usage

Figure 3-2 AirSPACE Dashboard

The following descriptions refer to the circled numbers above.

1. Menu Select Button

   Click the Menu Select button to display a pop-up menu that allows you to access any of the five AirSPACE menus.

   When you make a selection, the menu name becomes the label of the Menu button on the Dashboard.

   - Click Playlists to display the Playlist menu, which allows you to design and modify playlists of AirSPACE events. See “Playlists Menu” on page 3-35.
   - Click Controls to display the Controls menu which allows you to monitor automated events, or manually use any of four local AirSPACE record and playback applications:
     - Record / Monitor (VTR Emulator) application
     - Record (Automation Blind Record) application
     - Playlist application
     - SPACE Shift Delay application

     Remember that AirSPACE is designed to be operated primarily by remote control (from an external automation system or edit controller) — the local applications provide manual control capability to access all features, however, they are only available at the machine console and do not offer many automated functions available from external control applications.

The Controls menu is typically used to monitor the Channel Status and Event ID being controlled by an external automation system or edit controller. See “Controls Menu” on page 3-6.

- Click Setup to display the Setup menu, which allows you to set system parameters such as channel configuration, video setup, network configuration and Controller Setup. For details, see “Accessing the Setup Menus” on page 4-2.
- Click Warnings to display the System Diagnostic menu, which provides important disk drive, fan, temperature, and power supply status. See “System Diagnostic Menu” on page 3-54.
- Click Shutdown to display the Shutdown dialog box, which presents three different system shutdown options. For details, see “Power Up, Power Down” on page 2-35.

2. Time of Day Display

   The Time of Day Display displays the AirSPACE system’s internal clock. For more information see “Software Update Menu” on page 4-32

3. Reference Status Indicator

   The Reference Status Indicator indicates (by color) the presence and quality of your reference signal. Blue indicates no signal, yellow indicates unusable signal (i.e. a 625 reference when configured for 525 operation), and green indicates usable reference signal is present and the system is locked to it.

4. Disk Usage

   The Disk Usage display indicates (in percentage) the amount of disk space that is currently utilized on the AirSPACE disk array.

5. Machine Name

   The Machine Name display indicates the network name of the AirSPACE unit. The name is derived from the hostname text box on the Network Configuration menu within the Setup Menu.

Controls Menu

Click to display the Controls menu — the main work area for the AirSPACE system. Figure 3-3 illustrates a sample menu.

Figure 3-3 Controls Menu

The Controls menu allows you to perform one or more of the following functions simultaneously:

- Record or Play back single events to / from the server manually

- Shuttle, jog, and change the In and Out Points of a loaded event
- Play back lists of events manually
- View the Channel Status and Event ID being controlled by an automation system or edit controller.
- Set Durations and start delay loop recordings for SPACE Shift operations.

Four different control panel applications are used to perform these functions:

- Record / Monitor control panel
- Record control panel
- Playlist control panel
- Record Loop and Delay Tap control panels

Each AirSPACE application control panel appears in its own window on the Controls menu. An application is effectively a multi-purpose program that allows you to manually perform specific record, playback, monitoring, and "list playback" functions — independent of any automation, editing, or other external control system that is connected via RS-422. Using the Setup menu, this desired functionality and associated video streams are assigned to the different channels on each ACV board.

Although up to 5 ACV cards may be installed, because AirSPACE is an eight-channel device, you should operate the system with a maximum of eight ***concurrent*** *streams at DV25 or four at DV50 (up to 10 concurrent in SPACE Shift).*

The Record / Monitor Controller uses two channels of an ACV card but only uses up one stream as it is either playing or recording but not both. The Record and Playlist applications each use a single channel of an ACV and thus can use up 2 streams when running concurrently. Any combination of applications can be assigned, provided that the maximum of eight concurrent streams is not exceeded.

For details on the basic capabilities of each ACV board, see “Video Input / Output” on page 1-5. These capabilities will be elaborated upon in the following sections.

The following general rules apply to the Controls menu and to the applications themselves:

- Applications are always stacked vertically on the UI separated by a small space in between. They never overlap each other visually. In addition, applications are sorted vertically by channels, with the lowest numbered channel at the top.
- Applications can run simultaneously, either manually or via remote control, depending upon the available channels. If a channel is connected to a VDCP control device via RS-422 (such as an automation system), commands are recognized when the channel is in “Remote” and ignored when in “Local.” If a channel is connected to a Sony control device via RS-422 (such as an editor), the system responds to the last command asserted by either the external device or the local control panel.
- An application can be maximized or minimized by clicking the Min / Max button in the top left corner of each window.
    - With the button’s arrow pointing to the right, the application is minimized. In this mode, only the application’s top Status Bar is shown but the application is still running. See below for a detailed view of the Status Bar.
    - With the button’s arrow pointing down, the application is maximized, providing access to all of the application’s tools. Each application is explained in detail in the following sections.
- The scroll bar appears when additional vertical space is required in the Workspace. For example, with all applications minimized, the scroll bar is not active, but when two or more applications are maximized, the scroll bar can be used in the normal manner.

Status Bar

The figure below illustrates the information shown in each application's Status Bar. This bar is always present at the top of an application, whether the application is maximized or minimized.

1. Min/Max Button
2. Application Name
3. Channel Assignment
4. Transport Mode
5. Event ID
6. Signal Present Indicator

Figure 3-4 Status Bar

1. Min / Max Button

   Clicking the Min / Max button minimizes or maximizes the selected application. This button is disabled when controllers are in Remote mode (see Local / Remote below).

2. Application Name

   This text box names the application and identifies its specific function. Applications are assigned to channels using the Setup menu.

3. Channel Assignment

   This text box typically identifies the specific record or play channel to which the application is assigned (based on the number of its associated ACV board). The label can also be customized on the Setup: Channel Configuration menu.

3a. Local/Remote Switch (not shown)

A toggling button appears on VDCP controlled applications (Record and Playlist) to select whether the control panel operates from the local screen or the remote RS-422 connected device. When you select Remote, the panel automatically minimizes to prevent control conflicts.

4. Transport Mode

   The Transport Mode text box always indicates the status of the application and system output (for example, PLAY, STOP, RECORD).

5. Event ID

   The Event ID text box shows the name of the current event that is being recorded or played back.

6. Signal Present Indicator

   The Signal Present Indicator indicates (by color) the presence and quality of the SDI input signal to the ACV being controlled. Red indicates no signal, yellow indicates unusable signal, and green indicates a usable signal is present.

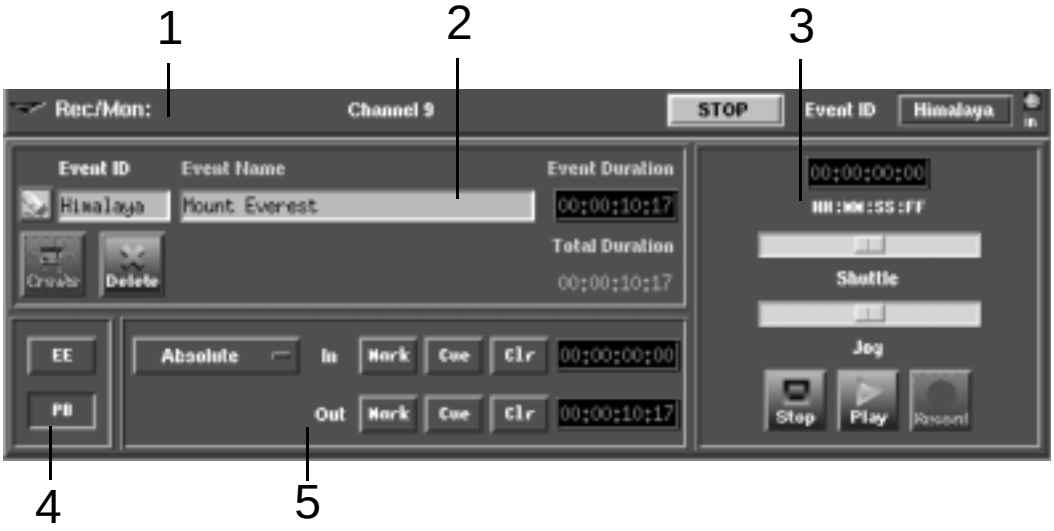
Record/Monitor Controller (Rec/Mon)

The figure below shows the Rec/Mon in its maximized form. Please note the following important capabilities:

- The Rec/Mon can be controlled both locally and by up to two remote control devices and by any number of LaunchPad applications, all simultaneously. Care should be taken to avoid operational conflicts.
- You can view the record or playback functions that are being performed by an automation system. In this mode, data from the automation system appears in the application's display text boxes, and status is provided.

- You can view the record or playback functions that are being performed by an edit controller. In this mode, data from the edit controller appears in the application's display text boxes, and status is provided.

The application is divided into five areas as shown in Figure 3-5.



1. Status Bar
2. Event Parameters
3. Transport Controls
4. Record Monitor Section
5. Event Modification Section

Figure 3-5 Record/Monitor Controller

Status Bar

The Status Bar provides current information about the applications, whether the application is maximized or minimized as described in the previous section.

Transport Controls

Figure 3-6 illustrates the Transport Controls.

Figure 3-6 Transport Controls

The buttons and text boxes in the Transport Control Section allow you to control the file (event) that is listed in the Event Parameter Section. The buttons are dimmed if no event is listed.

- At the top, the Time Code Display shows your current location in the file, with 00:00:00:00 representing the start of the file (in Absolute time code mode - see below). Standard time code notation is used.
- Click the SHUTTLE slider, and while holding, move the mouse left and right to shuttle within the file. Release the mouse button to stop.
- Click the JOG slider, and while holding, move the mouse left and right to jog the file. Release the mouse button to stop.

- The STOP button has two functions:
  - When recording an event, click STOP to stop the recording earlier than the entered duration. If you do not click stop, the file automatically stops when the full duration is reached.
  - When playing back an event, click STOP to stop playback at any point in the file. If you do not click stop, the file automatically stops when the end of the file is reached.
- Click the PLAY button to begin playing a selected event, or to resume playback after clicking STOP. The Transport Mode text box indicates “Play” in green. Playout commences at the position within the file indicated in the Time Code Display above the Shuttle control.
- Click the RECORD button to record into a new event that has just been created (by entering new event parameters and clicking Create) or into an existing event which has been loaded (by entering an existing event ID). The Transport Mode text box indicates “Record” in red. Recordings begin at the position within the file indicated in the Time Code Display above the Shuttle control.

Event Parameter Section

Figure 3-7 Event Parameter Section

The buttons and text boxes in the Event Parameter Section allow you to enter database information for new events to be recorded, or to select existing events for playback or modification.

- The Event ID text box allows you to enter the ID of a new or existing event — for recording, playback or modification.

  The following rules apply:

  - When a new Event ID is entered in Absolute mode, the Duration, Create, and Event Name functions activate allowing you to enter data for a new event to be recorded. In this mode, the controls in the Event Modification Section are dimmed.
  - When a new Event ID is entered in Virtual mode, the Create and Event Name functions activate — allowing you to enter data for a new event to be recorded. In this mode, the controls in the Event Modification Section are dimmed as all recording becomes open-ended and it is not possible to enter a duration.
  - Event IDs entered from the GUI can be up to eight alphanumeric characters in length. Event IDs can not contain spaces or any of the following characters: *, ?, :, /, and \. Longer ID's are supported for events transferred from NewsCutter, however, the VDCP protocol can only access events with no more than 8 character IDs.

- When an existing Event ID is entered, its information (as stored) appears in the Event Name and Duration text boxes — allowing you to play back the file. Neither text box can be changed at this point. In addition, the controls in the Event Modification Section activate, and the Delete button activates (allowing you to delete the event from disk).
- When an existing Event ID is entered, the system displays the first frame of the event on the ACV board's primary output (Absolute frame 00:00). The PLAY button also activates, allowing you to manually play the file.
- The adjacent pencil eraser button clears out the currently loaded event, clears all entries and puts the Rec/Mon into an idle state with black at the output.

• The Event Name text box has two functions:

- When a new Event ID is entered, the Event Name text box activates and allows you to name the event or provide other textual information about the event.
- When an existing Event ID is entered, the Event Name text box automatically fills in with the event name specified at the event's creation time.

• The Event Duration time code text box provides the ability to set up closed-ended records for new events and displays the playable event duration for existing events:

- When a new Event ID is created in Absolute mode, the Event Duration time code text box activates, allowing you to type the desired duration of the event to be recorded. After a recording is initiated, it will automatically terminate at this duration (a value greater than 0 must be entered in order to record).
- When a new Event ID is created in Virtual mode, the Event Duration time code text box is dimmed, allowing open-ended recordings.

- When an existing Event ID is entered and that event is loaded, the Duration text box displays the existing event's duration; the value can be adjusted using Mark In and Mark Out as described below.
- When new events are created, for convenience the Event duration text box automatically recalls the last valid duration that was entered. The only time that the text box is blank is when the Rec/Mon is first initialized.

- The Total Duration display shows the total extent of all media recorded for the current event (the amount of time between the first recorded frame and the last). This will be the same as the Event Duration unless Mark In and/or Mark Out points have been set.
- The Create button activates when a new Event ID has been entered. Click Create to create a new file after all the above fields are filled in as desired. Once clicked, the RECORD button activates, allowing you to record the file.
- The Delete button activates when a known Event ID is entered, allowing you to delete the file. Deleting an event from the AirSPACE video server automatically removes it from any playlists that included it. Click Delete to display the Delete Event dialog box.

- Click Yes to delete the event.
- Click Cancel to halt the procedure.

Event Modification Section

The buttons and text boxes in the Event Modification Section allow you to modify the inpoints and outpoints of existing events. You can also specify whether the clip will be using Absolute or Virtual time code modes. You can trim events with frame accuracy. When an existing event is entered in the Event ID text box, the previously set In and Out point information automatically fills in.

Figure 3-8 Event Modification Section

- The Time Code Mode selector provides a pop-up to allow the Rec/Mon to be operated in either Absolute or Virtual Time Code Modes.
  - In Absolute mode, the first frame of any existing event is 00:00:00:00 and the last frame is at the total duration of the event.
  - In Virtual Time Code mode you have a 24 hour space in which to record. Records default to start at 1 hour (01:00:00:00) but may be initiated at any time code at any time and may be discontinuous. All time code values where recording has not taken place are automatically striped with black.

  For a complete description of Virtual and Absolute time code modes, see “Time Code Modes” on page 5-5
- The In time code text box plus the three adjacent buttons allow you to adjust the event’s playback inpoint. In Absolute mode these must be within the boundaries of the original recording, in Virtual mode, you can pad the beginning of an event with black by setting your inpoint prior to recorded material.

For example, if a recorded event starts at 00:00 but actual content begins at 00:03, you can set a new inpoint to tighten the playback start time. The In time code text box always displays the current inpoint, whether it is adjusted or the original point.

- Click Mark to mark a new inpoint. This function can be performed with the event playing (mark on-the-fly) or with the event stopped.
- Click Cue to cue to the current inpoint shown in the In time code text box.
- Click Clr to clear any marked inpoint, returning the In time code text box to 00:00.

• The Out time code text box plus the three adjacent buttons allow you to adjust the event's outpoint. In Absolute mode these must be within the boundaries of the original recording, in Virtual mode, you can pad the end of an event with black by setting your outpoint beyond recorded material.

  For example, if a recorded event ends at 32:00 but actual content ends at 30:00, you can set a new outpoint to tighten the playback endpoint. The Out time code text box always displays the current outpoint, whether it is adjusted or the original point.

  - Click Mark to mark a new outpoint. This function can be performed on-the-fly or with the event stopped.
  - Click Cue to cue to the outpoint shown in the Out time code text box.
  - Click Clr to clear any marked outpoint, returning the Out time code text box to the physical end of recording.

• Regardless of where In and Out points are set, the trimmed recorded material remains on the server.

Record Monitor Section

The two buttons in the Record Monitor Section allow you to monitor a recording as it occurs (on an ACV channel output). The functions are similar to the EE (electronics to electronics) and PB (playback) buttons found on VTRs.

Figure 3-9 Record Monitor Section

- Click EE to monitor the input signal before it is recorded on the server.
- Click PB to monitor the playback signal of the media on the server.

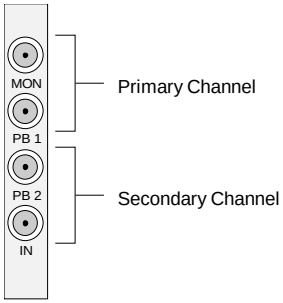
Regardless of EE/PB selection, when recording, you will always be monitoring the input signal.

For step by step instructions for using the Record/Monitor application, see "Recording Events Manually" on page 5-11.

Record/Monitor Controller (Rec/Mon) Notes

- Record Monitor Input/Output configuration is as follows:
  - With the Rec/Mon assigned to an ACV board, PB1 acts as your EE monitor and the MON output acts as your burn-in output.
  - PB2 mirrors the output of PB1 and IN is your video input.

  Use the figure below showing the ACV board's connectors for reference.



- Because the Rec/Mon uses both channels of an ACV board you can not record an event on one channel and play back a different event on the other channel with this application.
- In Release 2.0 and subsequent versions, it is possible for any Rec/Mon at any time to have the same event open. Multiple users can be playing back from or recording into the same event.

Caution should be used when more than one recording into the same event is occurring - if they are overlapped, there is no guarantee that media will be coherent.

Record Application

The figure below shows the Record application in its maximized form. Please note the following important capabilities:

- The Record application can be controlled either locally or by an external VDCP controller such as an automation system.
- Under local control, you can record *one event at a time* or you can delete an event.
- You can view the Channel Status and Event ID that are being controlled by an automation system. In this mode, data from the automation system appears in the application's Status Bar.

  The application is divided into three sections as shown below.

1. Status Bar 2. Event Parameter Section 3. Transport Controls

Figure 3-10 Record Application Controller

Status Bar

The Status Bar provides current information about the applications, whether the application is maximized or minimized.

Note that in the Record application, a Local / Remote toggling button appears to select whether the control panel operates from the local screen or the remote RS-422 connected device. When Remote is selected, the panel automatically minimizes to prevent control conflicts.

Transport Controls

The buttons and text boxes in the Transport Control Section allow you to control the file (event) that is listed in the Event Parameter Section. The buttons in the section are dimmed if no event is listed.

Figure 3-11 Transport Controls

- At the top, the In time code text box indicates the starting inpoint of the file. Standard time code notation is used. The file's current location on disk is not shown. Unlike the Record / Monitor application, you can not trim the inpoint with this application.
- The Out text time code box indicates the file's outpoint. Unlike the Record / Monitor application, you can not trim the outpoint with this application.
- When recording an event, click STOP to stop the recording earlier than the entered duration. If you do not click stop, the file automatically stops when the full duration is reached.

- Click RECORD to begin recording a new event that has just been created (by entering new event parameters and clicking Create). The Transport Mode text box indicates “Record” in red.

Event Parameter Section

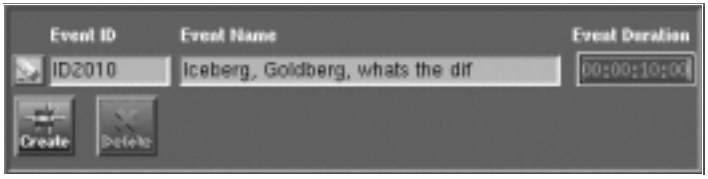


Figure 3-12 Event Parameter Section

The buttons and text boxes in the Event Parameter Section allow you to enter database information for new events to be recorded (one at a time). The section is identical to that in the Rec / Mon — except the section is designed for recording only.

- The Event ID text box allows you to enter the ID of a new or existing event for recording or deletion.

  The following rules apply:

  - When a new Event ID is entered, the Duration, Create, and Event Name functions activate — allowing you to enter data for a new event to be recorded. In this mode, the controls in the Event Modification Section are dimmed.

  - Event IDs entered from the GUI can be up to eight alphanumeric characters in length. Event IDs can not contain spaces or any of the following characters: *, ?, :, /, and \. Longer ID’s are supported for events transferred from NewsCutter, however, the VDCP protocol can only access events with no more than 8 character IDs.

  - When an existing Event ID is entered, its information (as stored) appears in the Event Name and Duration text boxes and the Delete button activates (allowing you to delete the event from disk).
  - The adjacent pencil eraser button clears out the currently loaded event, clears all entries and puts the Record application into an idle state with Black on the output.

- The Event Name text box has two functions:
  - When a new Event ID is entered, the Event Name text box activates and allows you to name the event or provide other textual information about the event.
  - When an existing Event ID is entered, the Event Name text box automatically fills in with the event name specified at the event's creation time.
- The Event Duration time code text box provides the ability to set up closed-ended records for new events:
  - When a new Event ID is created, the Event Duration time code text box activates, allowing you to type the desired duration of the event to be recorded. After a recording is initiated, it will automatically terminate at this duration (a value greater than 0 must be entered in order to record).
  - When an existing Event ID is entered and that event is loaded, the Duration text box displays the existing event's duration.
  - When new events are created, for convenience the Event duration text box automatically recalls the last valid duration that was entered. The only time that the text box is blank is when the Record application is first initialized.
- The Create button activates when a new Event ID has been entered. Click Create to create a new file after all the above fields are filled in as desired. Once clicked, the RECORD button activates, allowing you to record the file.

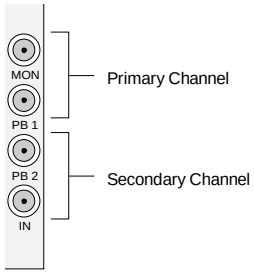
- The Delete button activates when a known Event ID is entered, allowing you to delete the event. Deleting an event from the AirSPACE video server automatically removes it from any playlists that included it. Click Delete to display the Delete Event dialog box.

  - Click Yes to delete the event
  - Click Cancel to halt the procedure.

Record Application Notes

- The Record application uses one channel only of an ACV board. The other channel was assigned at controller configuration time to a Playlist application (see the following section for information).
- You can independently record an event on the secondary channel and play back a different event (or the same event with a delay) on the primary channel with the Playlist application assigned.
- Record Application Input / Output configuration is as follows:
  - With the Record application assigned to an ACV board, PB 2 is the EE output and IN is the video input.
  - PB1 output and its MON output are assigned to the associated slot's independent play channel Playlist application.

Use the following diagram of the ACV board's connectors for reference.



Playlist Application

The figure below shows the Playlist application in its maximized form. Please note the following important capabilities:

- The Playlist application can be controlled either locally or by an automation system.
- Under local control, you can manually play back a list of events (called a Playlist).
- You can Freeze or Recue the list at any time as described below.

A Playlist is a list of files that are arranged in a particular order for playout. This function is typically performed by an automation system, but AirSPACE allows you to create playlists and play them back manually. This capability is provided primarily as a backup facility in the event that the automation system is not functional.

The Playlist application is divided into three sections as shown below.

1. Status Bar 2. Playlist Control Section 3. Playlist Display Section

Figure 3-13 Playlist Application Control Panel

Status Bar

The Status Bar provides current information about the applications, whether the application is maximized or minimized.

Note that in the Playlist application, a Local/Remote toggling button appears to select whether the control panel operates from the local screen or the remote RS-422 connected device. When "Remote" is selected, the panel automatically minimizes to prevent control conflicts.

Playlist Control Section

The Playlist Control Section indicates the playlist that is currently loaded, and provides a group of manual controls. Playlists are created on the Playlists menu. See “Playlists Menu” on page 3-35.

Figure 3-14 Playlist Control Section

- The Playlist text box names the current playlist that is loaded in memory. To choose a playlist, click the Down Arrow and select a list from the menu. After selected, its name appears in the text box and the list’s contents appear in the Playlist Display Section. The pencil eraser button clears out the currently loaded playlist and puts the playlist application into an idle state with black on the output (a confirm dialog is presented).
- The Event Clock is a countdown display that indicates the time remaining for playout of the current event — or when the next event will begin playing back.
- The five Playlist Action buttons below the Playlist text box have different functions depending upon the playlist mode. To understand these modes, note the following definitions:
  - Next Event — there are two types of “Next Events” on an ACV channel. (1) A “Next Event” is one that is waiting to be triggered or paused at frame 00:00. This event is highlighted in the playlist in reverse characters. (2) When a “Current Event” is playing or frozen, a “Next Event” is the one below it, to be played next.

- Current Event — The “Current Event” is the one that is playing (streaming out of an ACV channel) or frozen (stopped at a frame other than 00:00). The Current Event is always highlighted in reverse characters.
- Event Positions — In the Playlist Display Section, a “Current Event” is typically in the top position of the list, unless the user has scrolled the list down. When cued, the “Next Event” appears by default in the top position, when playing, the “Next Event” is in the second position down below the highlighted current event (again, unless the user has scrolled).

The following tables list the different functions of the five Playlist Action buttons depending upon the current state of the playlist application output. Resulting actions are also listed. Note that the buttons are dimmed if no playlist is loaded.

Table 3-1 Playlist State — List Paused, Waiting for Trigger

Playlist State	Click	Resulting Action
The list is stopped at 00:00, waiting for a trigger.	NEXT	The next event starts playing immediately. The FREEZE is canceled.
	FREEZE	The current event un-freezes and plays forward from the current location. The button turns black.
	CUE	The playlist cues to frame 00:00 of the next event, and this frame is routed to the ACV output. The list remains paused.

Table 3-2 Playlist State — Playlist is Playing

Playlist State	Click	Resulting Action
The playlist is playing back events.	NEXT	The event is terminated at its current location, and logged at its aired duration. The next event plays immediately. If there are no more events in the list, the system continues to play out the last clip.
	FREEZE	The current event freezes. The button turns red.
	CUE	The playlist cues to frame 00:00 of the current event. The list pauses and waits for command.

Table 3-3 Current Playlist State — Playlist is Frozen

Playlist State	Click	Resulting Action
The playlist is frozen, the FREEZE button is red.	NEXT	The next event starts playing immediately. The FREEZE is canceled.
	FREEZE	The current event un-freezes and plays forward from the current location. The button turns black.
	CUE	The playlist cues to frame 00:00 of the current event. The list pauses and waits for a command. The FREEZE is canceled.

The SKIP and HOLD functions are not implemented.

Playlist Display Section

The Playlist Display Section lists the details of the playlist that is named in the Playlist Control Section.

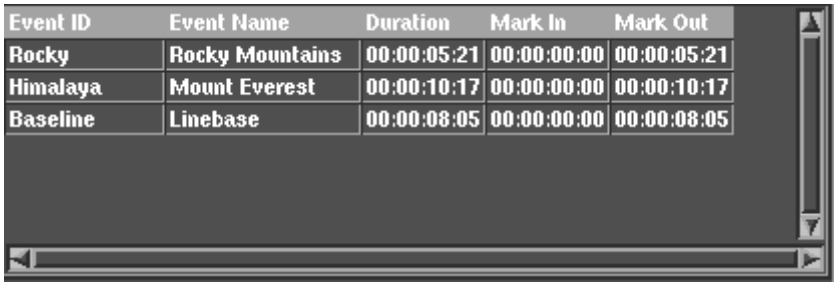


Figure 3-15 Playlist Display Section

- A highlighted line (not shown) indicates the “Current Event” that is playing or frozen. The line immediately below the current event is the “Next Event” — the one that will be played next.
- The horizontal and vertical scroll bars allow you to manually scroll the playlist — vertically to reveal additional events, or horizontally to reveal additional columns.
- Five columns of data are provided:
  - The Event ID column lists the event’s ID, as entered in the Record or Record / Monitor applications, LaunchPad application, or from an automation system.
  - The Event Name column lists the name of the event, as entered in the Record or Record / Monitor applications, LaunchPad application, or from an automation system
  - The Duration column lists the event’s playable duration, as entered in the Record or Record / Monitor applications, LaunchPad application or from an automation system.

  - The Mark In column lists the event's actual playback inpoint (as entered in the Record / Monitor application's In text box, or as trimmed by an automation system). If the inpoint does not differ from the original recording, the Mark In column reads 00:00.
  - The Mark Out column lists the event's actual playback outpoint (as entered in the Record / Monitor application's Out text box, or as trimmed by an automation system). If the outpoint does not differ from the original recording, the Mark Out column displays the time code at the end of the recording.

- Column Width can be adjusted by placing the pointer on the line that separates any two columns, until the small crosshair "+" appears. Right-click the mouse, and while holding, drag left or right to re-size the column to the left of the crosshair. The order of columns is fixed, however, and can not be changed.

The following points are important, regarding playlists in general:

- A playlist is a text file that references events by ID — the playlist itself does not store the actual media.
- Each playlist can contain up to 10,000 events, and you can have thousands of playlists stored on the server — limited only the number of text files that can be stored on the available media.
- An event can appear any number of times in a playlist, depending upon how the playlist was originally composed (on the Playlists menu, or on the automation system).
- When a list is first loaded, it automatically cues the first event and goes into the wait (or standby) state, and the first event is highlighted. The Event Clock resets to the first event's duration.
- It is not possible to play events one by one. After the playlist is started it automatically plays events as the preceding event ends.

- Click NEXT to begin manual list playback. The Event Clock counts down to the next event. When the clock reaches zero, the first event is logged, the clock resets to the next event's duration, the list scrolls up and the next event begins to play. This cycle repeats until the end of the playlist is reached, or until a new command is received such as NEXT, SKIP, FREEZE, HOLD or CUE.

All events called out in a playlist must exist on the server. If an event was called out in a playlist and subsequently deleted, it will be automatically removed from that playlist.

It is not possible to edit a playlist while it is loaded.

- The playlist might be scrolled while it is playing back events, or while it is paused. This feature allows you to review upcoming events, or those that have already been played.

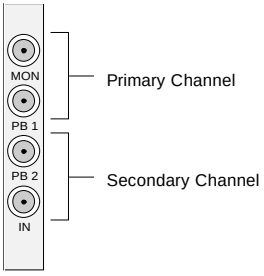
  In this situation, note that if the "Current Event" has been scrolled down, it will automatically jump to the top position in the Playlist Display Section when a transition occurs from a "Current Event" to a "Next Event."

- In automated list playback mode (from an automation system) the panel is in Remote mode and can not be viewed — only the status line is used to reflect automation commands.

Playlist Application Notes

- The Playlist application uses one channel only of an ACV board. The other channel is configured as a Record Application.
- You can playout a list of events on the primary channel and independently record new events on the secondary channel with the Record application assigned.
- The Playlist Application Output configuration is as follows:
  - With the Playlist application assigned to an ACV board, PB1 is an independent play channel with MON being the analog monitor for that channel.
  - PB2 output and In is the video input assigned to the associated slot's independent Record application.

  Use the following diagram of the ACV board's connectors for reference.



Playlists Menu

Click the Menu Select button, then click Playlists to display the Playlists menu which allows you to create and modify playlists of AirSPACE events.

Figure 3-16 shows the two main sections: Playlist Builder and Event Database.

1. Playlist Builder 2. Event Database

Figure 3-16 Playlists Menu

1. The Playlist Builder section provides a set of controls that allow you to open, create, modify and delete playlists. Events are selected from the Event Database section below, and arranged for playout as desired in the active playlist. After a list is created (or modified) and saved, it can be opened in the Playlist application and “run” on air. Refer to the “Playlist Builder” and “Playlist Application” sections for additional details.
2. The Event Database section provides a list of events that can be added to the active playlist in the Playlist Builder section. The list itself is derived from database entries that are made in the Record application, the Rec / Mon or by an automation system. The list can be sorted on any column. Refer to the “Event Database” section for details.

The events database only shows a “Snapshot” of events matching the search criteria entered. It is not dynamically updated as events are added, deleted, or modified.

Playlist Builder

At the top of the Playlists menu, the Playlist Builder section provides a group of controls that allow you to open, create and modify playlists. Figure 3-17 illustrates a sample Playlist Builder screen.

1. Playlist Function Controls 2. Current Playlist

Figure 3-17 Playlist Builder

Playlist Function Controls

The buttons and text boxes in the Playlist Function Controls section allow you to perform the functions necessary to create and modify playlists.

- The Playlist text box displays the name of the playlist that you are creating or modifying.
- Click New to create a new playlist. The Name Playlist dialog box appears which allows you to enter a name, up to 32 alphanumeric characters in length.

- Click OK to accept the new name. Once accepted, the name appears in the Playlist text box and the Current Playlist section is cleared. If the name already exists, you will be alerted in a dialog box to select another name.
- Click Cancel to cancel the procedure. The current playlist remains on line.

Note that if you click New and you have not saved changes in the current playlist, the Save Changes dialog box appears and prompts you to do so. See “Save Changes Dialog Box” on page 3-43.

- Click Open to open an existing playlist for modification. The Open Playlist dialog box appears which allows you to select an existing playlist from those already stored on the server.

Use the scroll bar as required to scroll the list, then click the desired playlist to highlight it.

- Click Open to open the selected playlist. Once opened, the name appears in the Playlist text box and its contents appear in the Current Playlist section.
- Click Cancel to cancel the procedure. The current playlist remains on line.

If you click Open and you have not saved changes in the current playlist, the Save Changes dialog box appears. See "Save Changes Dialog Box" on page 3-43.

- Click Save to save a new (or modified) playlist. The system updates the disk file with the current playlist name.
- Click Save As to save a new (or modified) playlist with a new name. The Name Playlist dialog box appears.
  - Type a new name, then click OK to accept. Once accepted, the name appears in the Playlist text box, but the list remains in the Current Playlist section. If the name already exists, you will be alerted in a dialog box to select another name.
  - Click Cancel to cancel the procedure. The playlist remains on line with its current name.

- Click Delete to delete a playlist from the server. The Delete Playlists dialog box appears.

Use the scroll bar as required to scroll the list, then click the desired playlist to highlight it.

- Click Delete to remove the selected playlist from the system.
- Click Cancel to cancel the procedure.

Note that you can not delete a playlist which is currently in use by any playlist controller application on the system. A warning dialog will appear if you attempt to do so.

- Click Close to close the current playlist. If you click Close and you have not saved changes, the Save Changes dialog box appears. See “Save Changes Dialog Box” on page 3-43.
- Click ADD to add a new event or multiple events (highlighted in the Event Database) to the current playlist. For additional rules on selecting events to add, see “Current Playlist” on page 3-42 and “Event Database Controls” on page 3-45.
- Click REMOVE to remove highlighted event(s) from the current playlist. All following events will be pulled up. For rules on highlighting single and multiple events, see “Current Playlist” below.

Current Playlist

The Current Playlist section displays the events in active playlist. New events are added from the Event Database section below, and always initially appear in the order in which you add them.

- The horizontal and vertical scroll bars allow you to manually scroll the playlist to reveal additional events or columns.
- Five columns of data are provided:
  - The Event Name column lists the name of the event.
  - The Event ID column lists the event’s ID (up to eight characters).
  - The Duration column lists the event’s total duration.
  - The Mark In column lists the event’s actual playback inpoint.
  - The Mark Out column lists the event’s actual playback outpoint.
- Column Width can be adjusted by placing the pointer on the line that separates any two columns, until the crosshair “+” appears. Right-click the mouse, and while holding, drag left or right to re-size the column to the left of the crosshair.

- Adding Events — the following rules apply to adding events to the playlist:
  - If no events are highlighted, new events are added at the bottom of the playlist when you click ADD.
  - If a single event (or multiple events) are highlighted, new events are added above the top-most highlighted event when you click ADD.
- Highlighting Events — the following rules apply to highlighting events in the playlist:
  - One Event — to highlight one event, click it. Click again to remove the highlight. This procedure allows you to remove one highlighted event, or to select a a single event above which a new database event will be inserted.
  - Continuous Block of Events — to highlight a continuous block of events, click the first event, then hold down SHIFT and click the second event to create a range. All events between the first and second events will be highlighted. This procedure allows you to select a range to remove or reposition.
  - Discontinuous Range of Events — to highlight a discontinuous range of events, click the first event, then hold down CTRL and click all other events that you want to highlight. Each event that you click will be highlighted.

Note that if you click one event without holding down SHIFT or CTRL, any currently highlighted range or block will be deselected, and the new event will be highlighted.

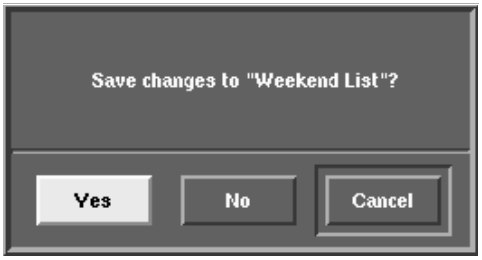
Save Changes Dialog Box

The Save Changes dialog box appears under the following conditions:

- If you click New, Open or Close prior to saving the current playlist.

- If you click the Menu Select button, and choose a menu other than the Playlists menu.

The dialog box appears and prompts you as follows:



- Click Yes to save all changes and update the disk file with the current playlist name. The next selected action (for example, New, Open, etc.) will be processed.
- Click No to process the next selected action without saving the file to disk. Any changes or modifications will be lost.
- Click Cancel to cancel the procedure. Changes are not saved to disk, and the next requested action is not processed.

Event Database

At the bottom of the Playlists menu, the Event Database provides a list of events (files) that can be added to the active playlist in the Playlist Builder section.

1. Event Database Controls 2. Event List

Figure 3-18 Event Database Controls and Event List

Event Database Controls

The buttons and text boxes in the Event Database Controls section allow you to sort the event list and delete events from the server.

- The Event ID text box allows you to set selection criteria for the events to be displayed in the Event List section in order to view a more manageable sized list. The text box is a filter that searches all events for a match based on the letters and numbers that you type. The following rules apply:
  - Enter an asterisk (*) to list all events on the server. The asterisk is a universal matching character which the system uses to “match everything.”

- Use the asterisk in conjunction with other characters to find everything that starts with any particular characters (xxx*), ends with any particular characters (*xxx) or contains any particular characters (*xxx*), where xxx represents the characters for which you are looking. For example, in the figure above, the system searches for all those events where the ID begins with the letters “ID.”
- Type the desired letters and/or numbers to set the match criteria. When you press Enter, the first matches appear in the Event List. The total number of matched events is displayed below the text box.
- If an asterisk does not appear anywhere in the Event ID text box, the system displays only the event that exactly matches the name in the Event ID text box.

• You can also do advanced matching when looking for specific Event ID text strings. For advanced matching, use the following characters: question mark (?), left and right brackets ([ ]), and the backslash (\). When these are included in the Event ID search, the following additional rules apply:

- ? Matches any single character in the string.
- [*chars*] Matches any character in the set given by *chars*. This can be a list of characters separated by commas and/or a sequence. If a sequence of the form t-y appears in *chars*, then any character between t and y, inclusive, will match.
- \x Matches the single character x. This provides a way of avoiding the special interpretation of the characters [and] in the pattern (?, * and \ can not be used for Event IDs).

• Click Delete to remove a single or multiple highlighted event(s) from the server. The Delete Event dialog box appears.

- Click Yes to delete the event.
- Click Cancel to halt the procedure.

If you attempt to delete an event that is included in one or more playlists, the event will be removed from those playlists without warning.

Event List

The Event List section displays the matching events that the system found in the database, based on the criteria you entered in the Event ID text box. You can highlight single or multiple events and add them to the playlist.

- The horizontal and vertical scroll bars allow you to manually scroll the event list, to reveal additional events or columns.
- Five columns of data are provided, similar to those in the Current Playlist section:
  - The Event Name column lists the name of the event.
  - The Event ID column lists the event's ID (up to eight characters).
  - The Duration column lists the event's total duration.
  - The Mark In column lists the event's actual playback inpoint.
  - The Mark Out column lists the event's actual playback outpoint.

- Column Width can be adjusted by placing the pointer on the line that separates any two columns, until the crosshair cursor appears. Right-click, and while holding, drag left or right to re-size the column to the left of the crosshair.
- Sorting — you can sort the Event List by any one of the five columns. Click a column header to select that data text box. The header color is highlighted to indicate that it is the new selected sort column. Note that the default sort is by Event ID, in ascending order. All sorts are case sensitive.
- Selecting Events — one or more events can be selected (highlighted) in the Event List. When ADD is clicked in the Playlist Builder section, the selected events will be added to the current playlist. For rules on adding events, see “Current Playlist”.

  The following rules apply to selecting events in the Event List:

  - One Event — to highlight one event, click it. Click again to remove the highlight.
  - Continuous Block of Events— to highlight a continuous block of events, click the first event, then hold down SHIFT and click the second event to create a range. All events between the first and second events will be highlighted.
  - Discontinuous Range of Events— to highlight a discontinuous range of events, click the first event, then hold down CTRL and click all other events that you want to highlight. Each event that you click will be highlighted.

  Note that if you click one event without holding down SHIFT or CTRL, any currently highlighted range or block will be deselected, and the new event will be highlighted.

SPACE Shift Application

Release 2.0 and subsequent versions include the ability to delay media as it is recorded into the array for automatic playout at a user-configurable later time. As many as 5 different independent delays may be configured using a Record Loop application and/or as many as 5 different delayed outputs may be configured for any Record Loop input (from 1 to 5).

In order to run SPACE Shift on an AirSPACE system the system must be configured with at least one ACV card or up to 5 as follows:

- Any Single ACV card may be configured as a Record Loop and a Delay Tap providing a single delayed output.
- An ACV card may also be configured as a Delay Tap only and assigned to any configured Delay Loop to provide an additional adjustable delay from that loop. A Delay Tap uses up an entire card.

SPACE Shift controllers have not been tested for concurrent operation with Rec/Mon or Record/Playlist functionality. AirSPACE is only approved for delay applications when no other operations are to be used.

The figure below shows an example screen with several delays running:

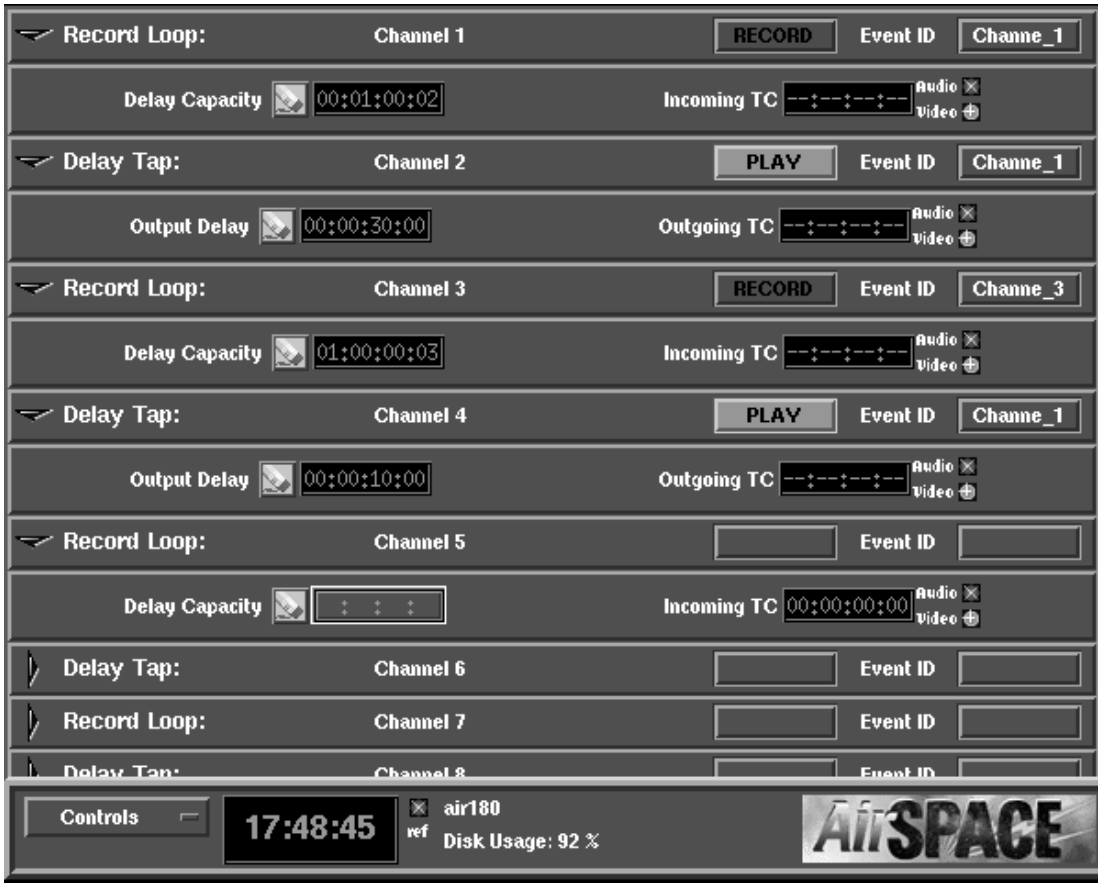


Figure 3-19 SPACE Shift Controls Example Screen

In this example, two different record loops are running, the first having 2 taps and the second providing 1 tap.

- The record loop running on ch 5 has been set to 1 minute in duration.
  - This loop has a delayed output playing 30 seconds behind the record on Channel 6 and a delayed output playing 10 seconds behind the record on ch 9.
- The record loop running on ch 7 has been set to 1 hour in duration.
  - This loop has a single delayed output playing the full hour behind the record on Channel 8.

Record Loop Controls

The first step in setting up a SPACE Shift delay application is to start a Record Loop going. The following figure shows the record loop:

Figure 3-20 Record Loop Controls

- The Delay Capacity time code text box allows the user to determine the length of the looped recording. This limits the maximum delay which may be obtained from this loop.
  - Record loops may be set to any duration (greater than 10 seconds), the total of which can be up to the capacity of the array.
  - Recordings are initiated when the Enter or Return key on the keyboard is selected after typing in a record duration.
  - Recordings are terminated by selecting the pencil eraser to clear out the Delay Capacity register. Since this will affect

any playouts depending upon this loop, a confirm / cancel warning dialog is presented.

- The status bar shows the normal information — note that the record loop has an event name which is automatically assigned based upon the channel recording.
- The Incoming TC display shows the LTC Time Code value for the channel associated with the record input. In this example, no valid time code was present.
- The 'A' and 'V' indicators show that valid audio and video respectively are present on the inputs (green is valid, red is missing or bad signal).

Delay Tap Controls

Any number of delay taps up to the capacity of the system (5) may be assigned to any record loop (see "Controller Setup" on page 4-25 for information about how to do this). The following figure shows a delay tap:

Figure 3-21 Delay Tap Controls

- The Output Delay time code text box allows the user to determine the amount of delay for the channels output.
    - Delay Taps may be set to any duration from 10 seconds up to the value entered in the channel's Record Loop Delay Capacity.
    - Playout is initiated when the Enter button is selected with a valid Output Delay duration.
    - If a record loop was just started, playout will be at black until the record loop has been running for the Output Delay duration.

  - Playout is terminated by selecting the pencil eraser to clear out the Output Delay register. Since this will affect playout, a confirm / cancel warning dialog is presented.

- The status bar shows the normal information including the event name which is associated with this Tap's Record Loop.
- The Outgoing TC display shows the recorded time code value associated with the playing media when it was recorded. In this example, no valid time code was present.
- The 'A' and 'V' indicators show that valid audio and video respectively are present in the currently playing recorded material and thus on the outputs of this channel.

  - These indicators will always be red (invalid) during the interval between when a recording has started and the delay tap duration has been reached.

System Diagnostic Menu

Click the Menu Select button, then click Warnings to display the System Diagnostic Report menu, a sample of which is illustrated below.

This menu allows you to examine the status of any of the monitored AirSPACE subsystems. Information on the state of each listed subsystem is provided, including the current Boot Drive.

If there are any important system problems, an “Alarm” button appears on the dashboard to take you directly to this menu.

Any “Alert” condition is shown in yellow text to indicate a situation which should be attended to. Any “Failure” condition is shown in red to indicate a situation which MUST be attended to. Text in the information column will indicate the nature of the problem.

If the System Diagnostic Report window is accessed shortly after initialization, there might be no values present as it takes several minutes for the text boxes to be updated. If no values are present, close and re-open the window.

CHAPTER 4

System Setup

Prior to proceeding with system setup, ensure that your AirSPACE system is properly installed and that you have reviewed the material presented in Chapter 3, "User Interface."

This chapter provides instructions for setting up a variety of AirSPACE system parameters. The following topics are discussed:

- Accessing the Setup Menus
- Version / License Information
- Network Configuration
- Video Format Selection
- Channel Configuration
  - Selecting and Renaming a Channel
  - Setting a Record Channel's VITC Input Line
  - Selecting a Playout Channel's Analog Output
  - Setting a Playout Channel's VITC Output Line
  - Adjusting a Playout Channel's Output Timing
  - Adjusting a Channel's End of Clip Mode
- Controller Setup
- Software Installation
- Setting the System Clock

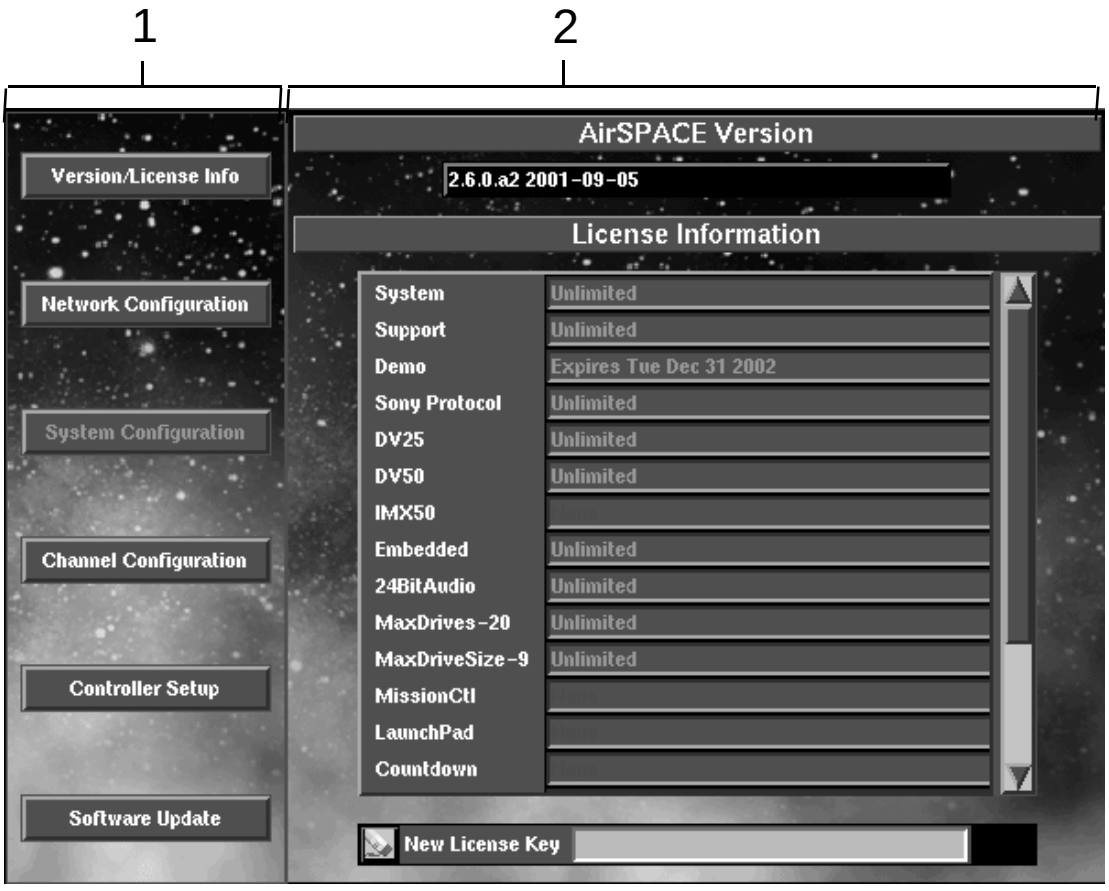
Accessing the Setup Menus

The Setup Menu allows you configure all aspects of the AirSPACE system. Accessing this area can have broad impacts on all system operations and should only be conducted by qualified facility personnel.

Changing system setup parameters can cause interruption of playout and/or destruction of media on the system. However, viewing setup parameters can be done without impacting the system. Proceed with caution.

Click the Menu Select button, then click Setup to display the Setup menu.

The figure below illustrates a sample Setup menu, which is divided into two main sections.



1. Setup Function Buttons 2. Setup Parameter Section

Setup Function Buttons

The Setup Function List consists of six buttons that provide access to the various AirSPACE system setup areas. The list remains on screen while the right-hand Setup Parameter Section changes accordingly. For each of these buttons, detailed information is covered in the appropriate sections following.

- Click Version / License Info to display AirSPACE software version and software license information.
- Click Network Configuration to setup the system's network parameters.
- Click Change Video Format to change the audio and video format of the entire disk array.
- Click Channel Configuration to configure your audio and video channels.
- Click Controller Setup to configure the way that the various AirSPACE applications (Record, Playlist, etc.) are assigned to your available ACV board channels.
- Click Software Update to update system software via a connected CD ROM drive, the internal modem connected via phone lines or via the internet.

Setup Parameter Section

The buttons, text boxes and dialog boxes in the Setup Parameter Section change depending on the button selected in the Setup Function List. These areas are described in detail in the following sections Channel Configuration.

Version/License Information

In the Setup Function List, click Version / License Info to display the Version / License Information screen.

Figure 4-1 Version/License Information Screen

This screen allows you to review current information regarding the AirSPACE software version and software licenses.

- The version of AirSPACE software under which the system was booted appears at the top of the page.
- All licensed features are shown in a scrolling list with the status of each license shown adjacent. Purchased features appear with an unlimited license. Users are encouraged to try out features —

contact Avid Broadcast Customer Support to obtain trial licenses. Trial licensed features appear with an expiration date.

- An area is provided for users to type-in a New License Key which may be obtained by contacting Avid Boulder Technical Support. License keys must be generated for the specific serial number machine on which it is to be entered — entering other numbers here could result in loss of capabilities.
- Licenses are also automatically updated from our customer serial number database whenever you do a software update, regardless of the source (modem, Internet, or CD ROM).

Network Configuration

Standard Gigabit Ethernet networking is supported in the AirSPACE video server. A *Gigabit Ethernet Installation Guide* is provided in PDF format on the AirSPACE Installation CD. Refer to it in the directory labeled Documentation for more information on installing the Gigabit Ethernet card and switch.

The Network Configuration menu allows you to perform the following functions:

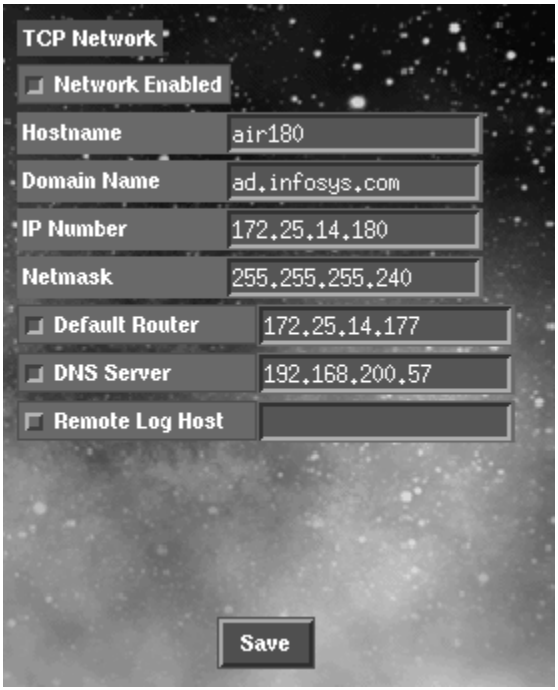
- Set network configuration parameters.
- Enable / disable network communications

Any changes you make to the current network settings will not take effect until you click the Save button on the Network Configuration screen and then reboot the system.

If you are unsure about any network configurations, names, or setup values discussed below, please contact your facility's system administrator for technical assistance.

To view or change any of the network parameters:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Network Configuration to display the Network Configuration screen (a sample of which is shown below):



3. Click the Network Enabled check box to enable (or disable) network communications for the AirSPACE unit.
4. Click in the Hostname text box, and enter the AirSPACE unit's network name. Use all lowercase alphanumeric characters only. Do not include spaces, periods or other non-alphanumeric characters.

The hostname you configure here appears on the system's dashboard at the bottom of the screen and will identify this particular AirSPACE unit both to the network and to the facility.

5. Click in the Domain Name text box and enter the AirSPACE unit's domain name. If you do not have a network domain, create one that relates to your facility's name (for example, avid.com or posthouse.com).
6. Click in the IP Number text box, and enter the assigned IP Number for the AirSPACE video server. If you do not know the system's IP number, contact your system administrator to obtain one.

   Remember the following points about the IP number:

   - The IP number is defined as four values, where each value is in the range 1 through 254 and is separated by periods (.).
   - Zero (0) is also valid in some cases. For example, 10.0.X.X is a valid network provided it is not connected to the Internet.
   - Ensure the IP number is on the same subnet as your other networked machines.
7. Click in the Netmask text box, and enter the AirSPACE video server's proper netmask value. If required, contact your system administrator to get the proper netmask value for your subnet (most likely, this value will be 255.255.255.0).
8. If your AirSPACE recorder needs to be accessed by other machines on a different subnet, you must supply a default router. To define a default router, enable the Default Router check box (red). Once enabled, enter the IP number.

   If you do not use a default router, ensure that the Default Router check box is disabled (blue). In the "disabled" mode, the AirSPACE video server will only be accessible by machines on the same subnet.
9. If you are using a name server, enable the DNS server check box (red), and enter the name server's IP number. If you are not using a name server, disable the check box (blue). When using the name server, ensure the name server has an entry for the hostname that you assigned to the AirSPACE recorder.

10. Click Save to save your configuration and enable the network interface. After clicking, a pop-up window appears showing the work in progress. Enabling the network takes a few seconds. After the network has been configured, the pop-up window disappears.
11. Restart the system to ensure proper network operation.

Verifying Communications

It is frequently useful to verify that your network is properly configured and that communication is taking place between an AirSPACE and other networked equipment such as a NewsCutter. The standard network "ping" command is useful to verify paths and can be used as described in this section.

Pinging from the AirSPACE

To verify communication with a known PC which has been configured for the network, you should know the IP address and host name of the target system (identified below as "Windows NT I/P address" and "Windows NT hostname" respectively).

To ping a target system from the AirSPACE system:

1. On the AirSPACE, type Ctrl+Alt+F1.
2. At the login prompt type:

   `maint`

   The password is **`mars`**.
3. Type:

   `ping <Windows NT I/P address>`

   If the ping succeeds, a series of responses appears.
4. Type Ctrl+C to terminate the ping.

   At this point, you should see a confirmation of your ping, i.e.:

   ```
   8 packets transmitted, 8 packets received,
   0% packet loss
   ```

If you do not see a message like this, see Appendix B.

5. Type Ctrl+Alt+F3 to return to AirSPACE.

Pinging from a workstation (such as a NewsCutter)

To verify communication from a known PC which has been configured for the network, you should know the IP address and host name of the target AirSPACE (identified below as "AirSPACE I/P" and "AirSPACE hostname" respectively).

To ping AirSPACE from another system:

1. Click Start>Run.
2. At the Run dialog box, type:

   `cmd`

3. In the Command Prompt window type:

   `ping <AirSPACE I/P>`

   If the ping succeeds, a series of responses appears such as the one below.

   ```
   8 packets transmitted, 8 packets received,
   0% packet loss
   ```

   If you do not see a message like this, see Appendix B.

4. To close the command prompt window, type:

   `exit`

System Configuration

The System Configuration screen enables you to perform the following AirSPACE setup functions:

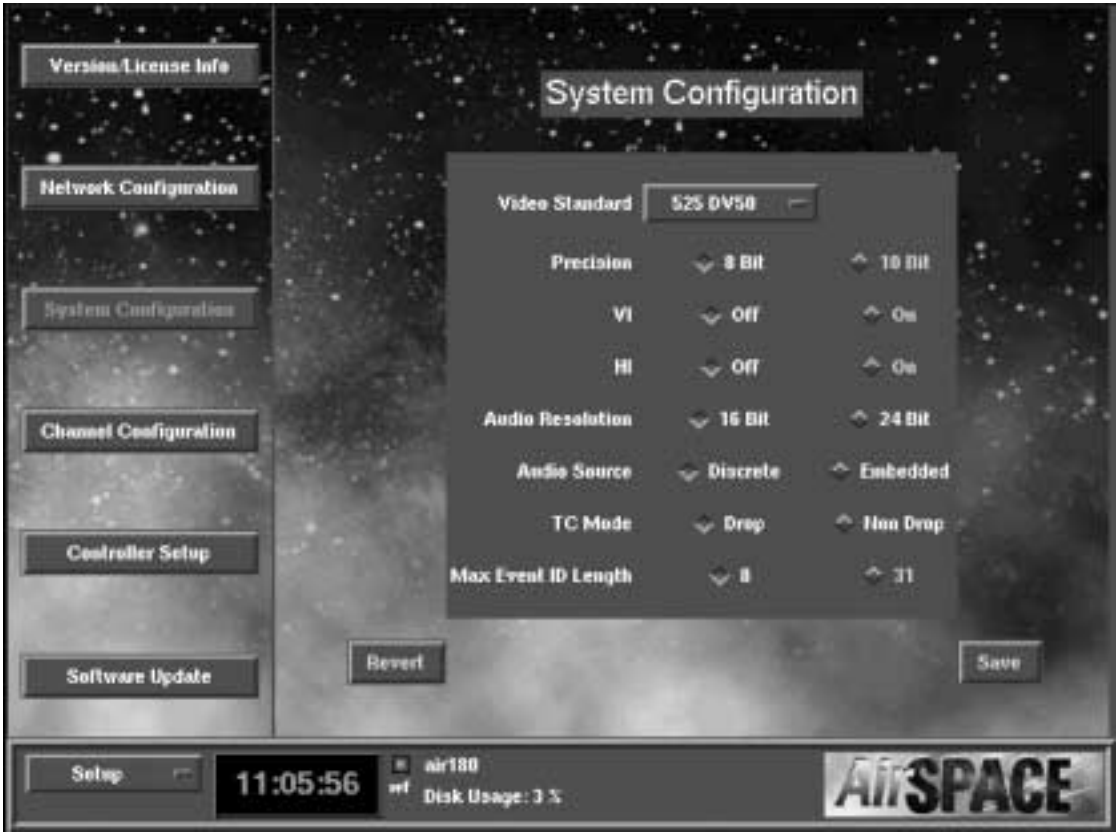
- Select the AirSPACE system's video recording standard.
- Select Precision, Vertical Interval, and Horizontal Interval settings.

- Select the Time Code setting.

Modifying System Configuration Selections can invalidate media currently on the array — proceed with caution and note all warning below.

To view or change any of the system configuration settings:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click System Configuration to display the System Configuration screen.



Selecting Video and Audio Recording Standards

The following notes describe the options available from this menu page:

Some features are license-protected and are not selectable without a valid license.

- Select 525 (normally Drop Frame) to select the 525/60 recording standard (for the US and Japan) or select 625 to select the 625/50 recording standard (European).
- Select DV25 to maximize the recording capacity of your AirSPACE array or select DV50 to obtain the highest quality video at half the capacity. Select IMX50 for MPEG i-frame-only compression.

The DV25, DV50, and IMX50 selections are available depending on which codecs are installed on the AirSPACE system.

- Select Audio Precision at 16 bit for normal DV media compatibility or 24 bit for ultimate audio quality or Dolby E compatibility. 24 bit is required to operate with Dolby E signals, 16 bit is adequate to support Dolby AC-3.

Consult Avid Technical Support for additional information about supporting AC-3 in Release 2.0 and subsequent versions.

Embedded audio is only supported in the SpaceSHIFT application.

- Select the appropriate Audio Source button to choose input audio to come from the discrete AES digital audio inputs or to have audio extracted from the embedded audio data in the horizontal ancillary data stream.

Either or both of the previous two selections (Audio Precision and Embedded Audio) are disabled unless the corresponding features are enabled via system licenses.

To change the Video and/or Audio format of the array:

1. Select from the drop down list the desired format/compression:

   - Click 525 DV25 to select the 525/60 recording standard with DV25 compression (for the US and Japan).
   - Click 525 DV50 to select the 525/60 recording standard with DV50 compression (for the US and Japan).
   - Click 625 DV25 to select the 625/50 recording standard with DV25 compression (European).
   - Click 625 DV50 to select the 625/50 recording standard with DV50 compression (European).
   - Click 525 IMX50 to select the 525/60 recording standard with IMX50 compression (for the US and Japan).
   - Click 625 IMX50 to select the 625/50 recording standard with IMX50 compression (European).

2. Select the desired Audio Precision (if feature has been licensed) as 16 or 24 bits.

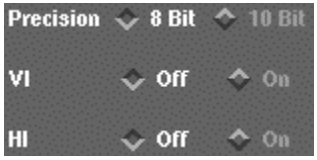
3. Click Save to accept the changes, or Revert to halt the procedure.
4. When you click Save, a warning dialog box appears asking you to confirm your choice prior to re-striping the system's disk array.

Changing the disk format marks all areas of the array invalid and causes all media to be lost.

Any change that you make to the system's disk format will alter the available recording time. For example, f you change from DV25 to DV50, your system's available recording time will be cut roughly in half.

Selecting Precision, Vertical Interval, and Horizontal Interval Settings

Video Precision, VI and HI settings are disabled. (These may be used in other software versions, such as AirSPACE HD.)



If DV codecs are installed in the AirSPACE system, you can select one of two compression rates: 25 Mbps (DV25) or 50 Mbps (DV50). If IMX codecs are installed, the compression rate is fixed at 50 Mbps. In either case, the array preserves all data from the codecs and precision can not be adjusted.

Selecting the Audio Resolution

To change the Audio Resolution setting:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click System Configuration to display the System Configuration screen.
3. Select the desired Audio Resolution button (if Licensed).

   - Use 16 Bit for normal AES, broadcast-quality audio.
   - Use 24 Bit for better audio precision or when using enhanced audio such as Dolby E.

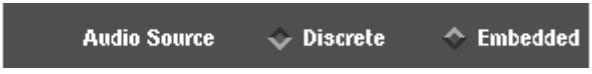
4. Click Save to accept the changes, or Revert to halt the procedure.
5. When you click Save, a warning dialog box appears asking you to confirm your choice prior to re-striping the system's disk array.

Each AirSPACE array can only be configured for 16 Bit OR 24 Bit. You cannot mix the two formats on one AirSPACE.

Selecting the Audio Source

To change the Audio Source setting:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click System Configuration to display the System Configuration screen.
3. Click the desired Audio Source button (if Licensed).



   - Discrete assigns the four channels of audio to be recorded from the AES digital inputs (AES 1/2 and AES 3/4 found on the Break Out Panel)
   - Embedded assigns the four channels of audio to be recorded from data extracted from the horizontal ancillary data (HANC) embedded in the SDI video stream.

4. Click Save to accept the changes, or Revert to halt the procedure.
5. When you click Save, a warning dialog box appears asking you to confirm your choice prior to re-striping the system's disk array.

Each AirSPACE array can only be configured for embedded OR discrete. You cannot mix the two formats on one AirSPACE.

Embedded audio is approved only for operation in SPACE Shift applications and may not work correctly used in other AirSPACE modes.

Selecting the Time Code Setting

To change the Time Code setting:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click System Configuration to display the System Configuration screen.
3. Click the diamond corresponding to the desired setting.

   - Drop is short for Drop Frame and will put the AirSPACE into Drop Frame mode.
   - Non Drop is short for Non Drop Frame and will put the AirSPACE into Non Drop Frame mode.

Each AirSPACE array can be in only Drop Frame OR Non Drop Frame mode. You cannot mix the two on one AirSPACE.

Changes made to the Audio Source selection or to the TC Mode do not cause the array to be reformatted and thus do NOT harm any media on the disks. Committing the changes of either of these functions do, however, cause all playing streams to stop and the user interface to reboot.

Max Event ID Length

This setting is not implemented; therefore the selection is disabled.

Channel Configuration

The Channel Configuration screen allows you to perform the following AirSPACE setup functions:

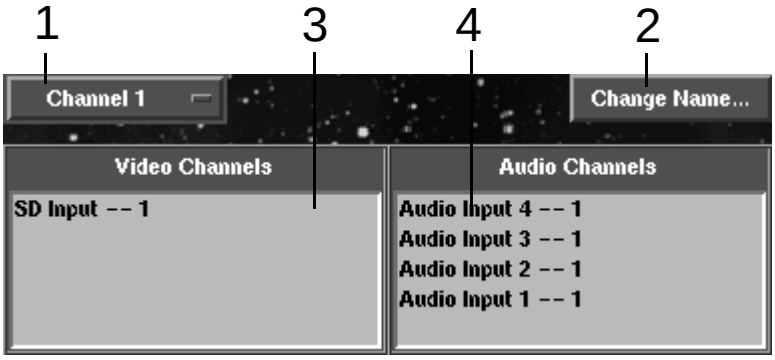
- Select a channel to configure
- Rename a channel

- Configure a channel's analog video monitor outputs
- Adjust the channel's video output timing
- Adjust the channel's VITC input (or output) line select

Instructions for each setup procedure are provided below.

Channel configuration is performed on a per-ACV card basis — each channel can be configured independently of others, with variations appropriate to primary or secondary channel features.

The figure below illustrates the top portion of the Channel Configuration screen:



1. Channel Select Button
2. Change Name Button
3. Video Channel Configuration
4. Audio Channel Configuration

Figure 4-2 Channel Configuration Screen (Top Portion)

The numbers below refer to the callouts in Figure 4-2.

1. Channel Select button

   The Channel Select button allows you to select the channel that you want to configure. Click the button to display the drop-down Channel List, which shows all available channels on your system (two channels per ACV board for Rec/Play; one channel per ACV board for Rec/Mon) as they are currently named.

When you select a channel from the list, its name appears in the Channel ID text box, and you can now change its name or modify its configuration.

2. Change Name button

   The Change Name button allows you to enter a custom name for an ACV board channel. Click the Change Name button to display the Change Name dialog box.

   Type a channel name, up to 32 alphanumeric characters in length. Click OK to accept the new name or Cancel to ignore. Once accepted, the name appears in the channel's Status Bar for any application that is assigned to that specific channel.

3. Video Channel Configuration

   The Video Channel Configuration section lists the current characteristics of the channel's video components, including the assigned slot and input type.

4. Audio Channel Configuration

   The Audio Channel Configuration section lists the current characteristics of the channel's audio components, including the assigned slot and the number of audio channels available.

Selecting a Channel

To select an ACV channel to configure:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Channel Configuration.
3. Click the Channel Select button.

   In the drop-down Channel List choose the channel that you want to configure. The selected channel's name appears in the Channel

ID text box, and you can now change its name or modify its configuration.

4. After the desired channel has been set up, repeat step 3 to select another channel to configure, or return to another AirSPACE menu via the Menu Select button.

Channel parameters are set on a per-channel basis. To configure another channel, first select it with the Channel Select button, then proceed with any or all of the following channel adjustments.

Renaming a Channel

To rename an ACV channel:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Channel Configuration.
3. Select the channel that you want to rename. For instructions, see "Selecting a Channel" on page 18.

Take care when renaming channels that are associated with Media Browse implementations. Media Browse looks for the controller by channel name.

4. Click the Change Name button.

5. In the Enter Channel Name dialog box, type the desired name — up to 32 alphanumeric characters in length.

6. Click OK to accept the new name, or Cancel to halt the procedure. Once accepted, the name appears in the channel's Status Bar — for any application that is assigned to that specific channel.
7. Repeat steps 3 through 6 for additional channels that you want to rename.

Selecting a Record Channel's VITC Input Line

To select the vertical interval line that is used for a record channel's input time code source:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Channel Configuration.
3. Select the record channel that you want to set up. For instructions, see "Selecting a Channel" on page 18. When a record channel is selected, the VITC Input Line Select control appears in the bottom portion of the Channel Configuration screen.

4. Using the VITC Input Line Select control, select the desired vertical interval line:

   Click the Up / Down Arrows to select the desired line.

5. Click Save to save the configuration to disk, or Revert to cancel any changes and return to the previous settings.
6. Repeat steps 3 through 5 for additional record VITC input lines that you want to select.

Selecting a Playout Channel's Analog Output

The Analog Component Output control selects the type of signal that appears on the three configurable video output connectors — in the breakout panel's Video Section (for the associated ACV board).

Once selected, the breakout panel's three component connectors will provide a copy of the ACV board's PB 1 signal in the selected format.

These outputs are provided for monitoring purposes and are not for broadcast to air applications.

The breakout panel's three analog component output connectors provide a component video copy of the selected ACV board's PB 1 signal.

To select the desired analog component output format for the playout channels:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Channel Configuration.
3. Select the playout channel that you want to set up. For instructions, see "Selecting a Channel" on page 4-18.

   The Analog Component Output control appears in the bottom portion of the Channel Configuration screen.

4. Select the desired component analog format:

- Click the diamond adjacent to Y -- Pb -- Pr to select a Y / Pb / Pr component signal. Color difference outputs are provided.
- Click the diamond adjacent to G -- B -- R to select a G / B / R component signal. Green, Blue, and Red outputs (also called RGB) are provided.

5. Click Save to save the configuration to disk, or Revert to cancel any changes and return to the previous settings.
6. Repeat steps 3 through 5 for additional playout channels.

Selecting a Playout Channel's VITC Output Line

- VITC Output Line Select

  The VITC Output Line Select control determines the line on which you want to reinsert VITC time code. Click the Up / Down buttons to select the desired line of the playback output:

In Release 2.0 and subsequent versions, VITC extraction and reinsertion from/to user selectable lines is fully supported, however, no access to VITC data is available via system control.

To select the vertical interval line on which you want to reinsert a playout channel's VITC time code:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Channel Configuration.
3. Select the playout channel that you want to set up. When a playout channel is selected, the VITC Output Line Select control appears in the bottom portion of the Channel Configuration screen.

4. Using the Up / Down arrows, select the desired vertical interval line:
   - For 525 video, valid lines are 12 - 19.

- For 625 video, valid lines are 9 - 22.
- Adjust the Down button to the end, to display OFF. This action turns off VITC reinsertion.

5. Click Save to save the configuration to disk, or Revert to cancel any changes and return to the previous settings.
6. Repeat steps 3 through 5 for additional playout channels.

VITC insertion overwrites at the playback output with whatever is on the selected lines — unless turned off via this control.

VITC reinserted time code is placed on the serial digital and component analog outputs. It is not reinserted on the composite monitor outputs.

Adjusting a Playout Channel's Output Timing

- Video Output Timing

  The Video Output Timing controls allow you to adjust the channel's output timing in relation to the reference video input. The channel's digital, component, and composite video outputs are all adjusted simultaneously with these controls. The effects of any timing change might be viewed immediately on the output of the selected channel.

Analog Outputs are provided for Monitoring applications only. Analog Output timing follows Digital Output timing and there is no color frame ID. We recommend the use of genlocking D to A converters on the output side when the system is to be used in analog environments.

To adjust a playout channel's output timing in relation to the AirSPACE Server's reference video input:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Channel Configuration.
3. Select the playout channel that you want to set up. For instructions, see "Selecting a Channel". When a playout channel is

selected, the Video Output Timing control appears in the bottom portion of the Channel Configuration screen.

4. Using the appropriate Up / Down arrows, adjust the channel's timing:
   - Click the up / down arrows (or highlight and type-in) for Lines to change timing on a line basis. The adjustable range is -3 to +5 lines.
   - Click the up / down arrows (or highlight and type-in) for µSec to change system timing on a microsecond basis. The adjustable range is 0 to +63.555 microseconds.

The Output Timing µSecs is always a positive value counting from the start of the line. So -1 line, 6 µSecs is really -64 µSecs + 6 µSecs = -58 µSecs.

5. Click Save to save the configuration to disk, or Revert to cancel any changes and return to the previous settings.
6. Repeat steps 3 through 5 for additional playout channels.

Adjusting a Channel's End of Clip Mode

When the end of the playout of a clip is reached, one of four behaviors can be selected by the following settings:

These settings are only available and functional on a Playlist controller, which is being controlled via VDCP protocol or locally through the user interface (UI).

- **Cue to 1st Frame of Next**– At the end of clip, cue to the first frame of the next clip in the playlist.
- **Wait in Black** – At the end of clip, wait in black. The output goes to black.

- **Stop on Last Frame** – At the end of clip, stop on the last frame of the clip that was played.
- **Wait in EE** – At the end of clip, wait in EE. The input signal feeding the record channel of this ACV card will be passed through to the output.

To adjust a channel's end of clip mode:

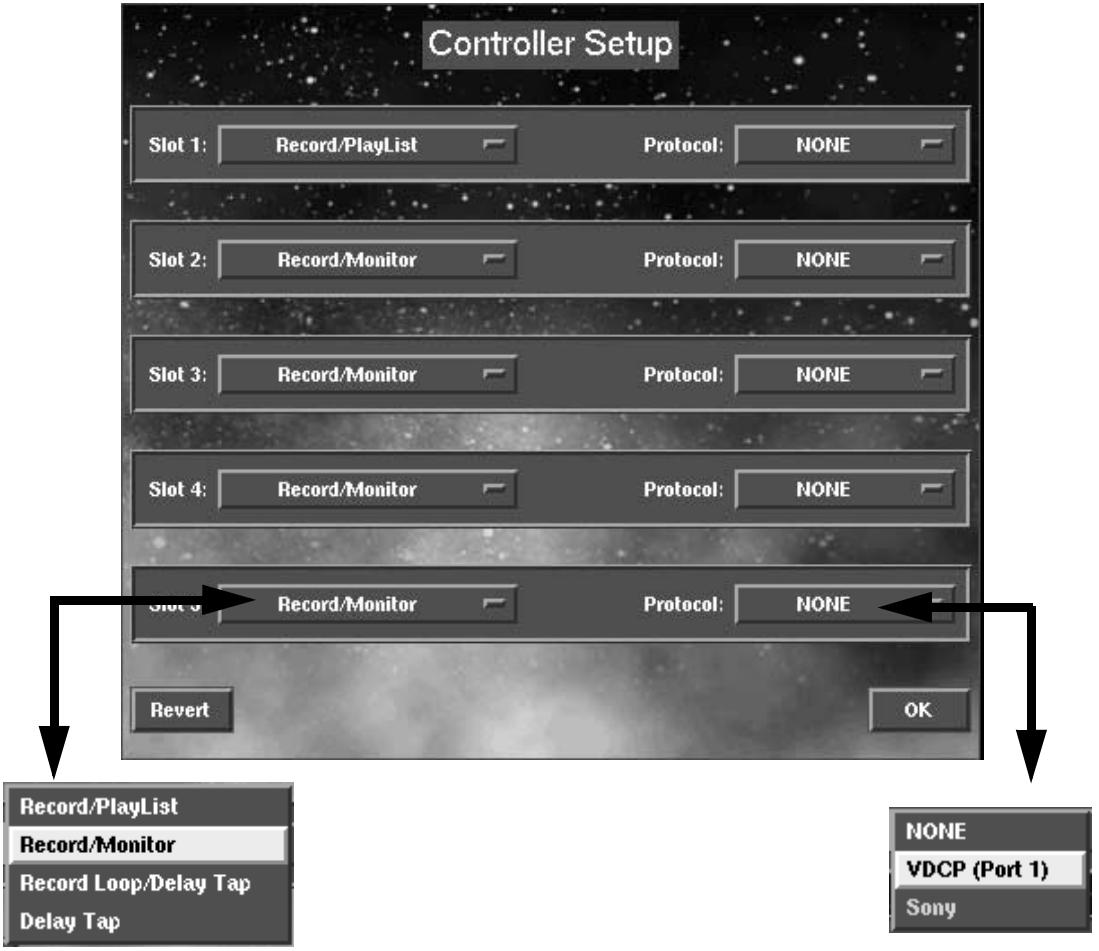
1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Channel Configuration.
3. Select the playout channel that you want to set up. For instructions, see "Selecting a Channel" on page 4-18.
4. When a playout channel is selected, the At End of VDCP Play control appears in the bottom portion of the Channel Configuration screen.

5. Select the appropriate setting.
6. Click Save to save the configuration to disk, or Revert to cancel any changes and return to the previous settings.

Controller Setup

The Controller Setup dialog box allows you to configure the various AirSPACE applications (Record, Playlist, etc.). This menu is where the overall functional operation of the server is established. Decisions

made here affect the mapping of ACV I/O cards to the functional uses of the machine.



The Controller Setup dialog box allows you to select the application type and protocol that you want enabled on the Controls menu for your AirSPACE system. Any combination of the three available applications might be selected — within the constraints of your system's physical I/O resources. A pop-up selector for the various application controls can be selected for each Slot as detailed in the steps below.

SPACE Shift controllers have not been tested for concurrent operation with Rec/Mon or Record/Playlist functionality. AirSPACE is only approved for delay applications when no other operations are to be used.

For each application in turn, click the adjacent Protocol button and select the desired protocol. To complete the procedure, click OK to change the system's Controller Setup (or Cancel to halt the procedure). When you return to the Controls menu, the new configuration will be available for use.

In addition to video assignments, note the following important static audio and protocol assignments:

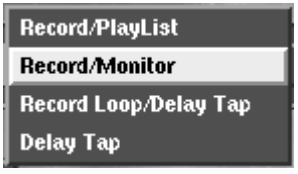
- Audio assignments for all systems:
  - All ACV boards are configured to record and playout four channels of AES audio and four channels of analog audio (for monitoring purposes).
  - To enable AC-3 audio, consult tech support.
- Protocol assignments for all systems:
  - VDCP protocol can only be used with Record / Playlist applications. The connection should be made on the RS-422 control ports.
  - Sony protocol can only be used with the Record / Monitor application.

In the event that commands are "simultaneously" received by both RS-422 ports of any ACV board (Rec / Mon), the last command received takes precedence.

Because VDCP supports addressing, it is possible to physically connect an RS-422 cable to one break-out box but control a card associated with a different break-out box. However, reconfiguring the card (i.e. setting the port to "Local" or reconfiguring it to "Sony" or "None") that is associated with the break-out box to which the cable is connected breaks the logical connection. Therefore, Avid recommends that you physically connect the RS-422 cable to the break-out box associated with the card you want to control.

To configure the controller system complement:

1. Click the Menu Select button, then click Setup.
2. In the Setup Function List, click Controller Setup to display the Controller Setup dialog box.
3. For each active slot, select the application type that you want enabled on the Controls menu. Any combination of applications can be selected within the constraints of your system's physical I/O resources.



   - The Record/Monitor selection indicates you want this slot to use the Record/Monitor (Rec/Mon) application.
   - The Record/Playlist selection indicates you want this slot to use the Record and Playlist applications.
   - The Record Loop/Delay Tap and Delay Tap selections indicate that you want to use this slot for a SPACE Shift delay application.

4. For each active slot, select from the available pop-up menu — either a) the Protocol to be assigned to each controller menu or b) the Master Delay Loop for that Delay Tap.

   a. For "Record / Monitor" and "Record / Playlist," available protocols can be selected in the pop-up and will be enabled or dimmed depending upon if they can be used for that particular application.

   b. If a slot is assigned as a "Record Loop / Delay Tap" or "Delay Tap," instead of a protocol selection, you must select the Master Delay Loop slot from which the Delay Tap will be playing out. Any Delay Tap may be assigned to any slot which has been configured with a Record Loop.

5. Click OK to update the system's Controller Setup based on your selections, or Cancel to halt the procedure. Confirming any changes will halt the playout of all channels — a warning dialog is presented to advise that will happen. When you return to the Controls menu, the new configuration will be available for use.

Software Installation

The AirSPACE video server's software resides on the system's disk drives in RAID-protected form. Upon initial receipt of your system, the software is already installed at the most current version available at the time. Obviously, system software is continually evolving and updates will become available as time passes.

All system software, as well as major software updates, are available on CD ROM. You may also choose to update your software via modem or via an Internet connection, in which case you may skip the Connecting CD ROM section.

You must have a valid support license to update the software.

If you do need to re-install the software (or update your system's software), the following sections provide step-by-step instructions. The topics covered are:

- Connecting the CD ROM
- Software Update Menu
- Enabling Software Licenses

AirSPACE units always cold boot from drive A (the upper left drive in the array). If the system has rebooted automatically, it might be running on a different drive. You can check which drive the system has booted on by going to the Warnings screen of the system GUI.

Care should be exercised when upgrading versions as some versions are not backwards compatible (media will be lost when down-revving).

You may need to cycle power to ensure that drive A is the drive to get updated. If the machine refuses to boot from drive A, turn off power and swap drives A and B, then restart. After a single drive update, if you want to go back to the previous software revision, power down, then swap the A drive with a different active drive in the array.

As long as this is done with power off, any drives may be inserted in any slot and audio/video data remains intact.

Connecting the CD ROM

You must connect a suitable CD ROM Drive to the external SCSI connector on the back of the chassis and initiate software updates from the user interface.

The Avid CD ROM Drive and Cable accessory is recommended because it has been tested and pre-qualified to meet EMC and safety guidelines. Note that any conforming CD ROM drive with single-ended SCSI (SCSI I, II or Ultra) plus cable (with the appropriate 68-pin connector) can be used. However, if the Avid CD ROM Drive is not used, the customer is responsible for EMC and safety issues.

- If the CD ROM drive is customer supplied, it must be marked with the correct agency approvals appropriate for the country of use.
- If the SCSI cable is customer supplied, it must be shielded in order to maintain emission specifications.
- The CD ROM Drive must be terminated ether internally, or with an external terminator at the end of the SCSI chain. The SCSI address of the CD ROM drive must be set to “1.”
- In the event of a major system failure where the operating system data has been lost, the system can boot from any undamaged drive that is moved into slot A. Contact Technical Support for details.

To connect the CD ROM:

1. Ensure that the proper model of CD ROM is available. If you do not have a suitable model, the Avid CD ROM Drive and Cable accessory is recommended.
2. Connect the CD ROM drive to the SCSI connector.
3. Terminate the CD ROM Drive connection using the supplied terminator.

*For systems running software prior to Version 2.0.10, ensure that the CD ROM drive is connected and **turned on** before powering up the AirSPACE chassis.*

Software Update Menu

In the Setup Function List, click Software Update to display the Software Updated Configuration screen. This screen allows you to perform the following setup functions:

- Retrieve the current list of available software versions
- View Release notes for available software versions
- Update the current system licenses for features and options
- These functions can be accomplished from this screen by:
    - Connection to the Avid Software Support Server via the Internet
    - Establish a modem connection to the Avid Software Support Server
    - Update software via CD ROM
- Update the Boot Drive
- Copy the new / current operating system version to all drives

The following figure shows an example Software Update menu screen. You can click the Release Notes button to view release notes for the currently selected version, which appears at the top of the screen.

CD-ROM Software Updates

To perform a CD-ROM update from this screen, select the CD-ROM Update button and follow the on-screen instructions.

Remote Software Updates

Before you begin, check with your system administrator to verify that port 5999 is open for TCP/IP and UDP. If your Ethernet network is already connected to the Internet, start with step 2.

To perform a remote update from this screen:

1. Connect to the Internet.
   a. Select Modem Update.
   b. Scroll the list and find the closest city for a toll free or lowest toll connection.
   c. Edit the Dial out number with any needed modifications (i.e. 9 to get out)
   d. Select Dial.

   Once connected, the system will return you to the Software Update Screen
2. Select Retrieve Versions.
3. Select Release Notes.
   - Review the notes for any prospective versions, assure that any listed limitations will not affect your uses of the system.
   - Consult with Avid Technical Support for further information about the features, limitations, and desirability of any release for your application.
4. Highlight desired version in list, select Update Boot Drive.
5. When instructed, Power Cycle the entire system.
6. Thoroughly test the new version in your environment with whatever control systems and network interfaces which are used in your facility.
7. When you are satisfied that the new version should be retained, return to this screen and select Copy to All Drives for full RAID 1 operating system protection.

Setting the System Clock

The Dashboard shows time of day in a prominent display, currently based upon the system clock. Systems are shipped from the factory with the Computer's BIOS clock set to GMT and should be localized to your regional time zone.

The time zone is set by copying the correct time zone file into the file /etc/localtime. The timezone files may be found in the directory /usr/share/zoneinfo.

To set the system clock:

1. Login at the UNIX prompt (Ctl+Alt+F1) using the user name and password provided in this manual or by your Avid Broadcast Customer Support representative. See step 2 on page 4-9 for more information.
2. Change directories to /usr/share/zoneinfo and find a file named after a city in your time zone.
3. Copy that file to /etc/localtime.

   For instance to set a system to the Mountain time zone in North America use:

   ```
   cp /usr/share/zoneinfo/America/Denver /etc/localtime
   ```

4. Logout and return the display to the AirSPACE GUI (Ctl+Alt+F3)
5. If your local time now still requires adjustment you may reset the BIOS clock by using the Unix "date" command.

   ```
   date yymmddhhmm.ss
   ```

   For example, **`date 0101010101.00`** sets the clock to January 1, 2001 at 1:01 AM.

You may consult Avid Broadcast Customer Support for assistance in setting your clock.

CHAPTER 5

AirSPACE Operations

This chapter provides operating instructions for the AirSPACE video server. The following topics are discussed:

- Remote operations
- Recording events manually
- Playing back events manually
- Creating and modifying playlists
- Playing back playlists
- Deleting events
- Delayed playout with SPACE Shift

Before using procedures in this chapter, be familiar with the contents of Chapter 3, “User Interface.”

As a prerequisite, a qualified facility engineer or technician should read and configure the AirSPACE system as described in Chapter 4, “System Setup.”

Remote Operations

The following topics are discussed in this section:

- Remote Control Setup Checklist
- Time Code Modes
- Remote Control Operating Notes

Remote Control Setup Checklist

Prior to operating the AirSPACE video server by remote control, ensure that the following hardware connections are made, and that the following system configuration functions are set as desired in the Option section.

General Remote Control Setup

❏ Ensure that the AirSPACE video server is properly installed. For details, see Chapter 2, “Installation.”

❏ Ensure that the AirSPACE video server’s video format and audio source is properly selected. For instructions, see “System Configuration” on page 4-10.

❏ Ensure that each desired function (Record / Playlist or Rec / Mon) is properly configured for your application. See “Controller Setup” on page 4-25.

❏ If required for your specific configuration, ensure that each playout channel’s component analog outputs are set to the desired format. For details, see “Channel Configuration” on page 4-16.

❏ Ensure that each playout channel’s VITC output line and record channel’s VITC input line is properly set. See “Channel Configuration” on page 4-16.

❏ Ensure that each playout channel's output timing is properly set. For details, see "Channel Configuration" on page 4-16.

❏ If required for your specific configuration, ensure that the AirSPACE video server's network parameters are properly set. For details, see "Network Configuration" on page 4-6.

Remote Control from an Automation System

Each ACV board's associated breakout panel includes two remote connectors.

- The REMOTE 1 port is normally used for remote control capability for the associated ACV board's primary channel.
- The REMOTE 2 port is normally used for remote control capability for the associated ACV board's secondary channel.

Automation systems can in fact access any VDCP configured input or output channel from any Remote connector also so configured. We recommend for ease of troubleshooting that users physically connect to the appropriate Remote port as described above.

❏ Ensure that each configured panel (automation protocols are available for Record and Playlist controller panels) has selected an appropriate automation protocol for your application (currently VDCP is the only supported automation protocol). See "Controller Setup" on page 4-25.

❏ For each breakout panel in your AirSPACE configuration, ensure that the automation system's RS-422 port(s) are properly connected to the desired remote port(s) on the breakout panel.

❏ Repeat the above item for *each channel* (on each ACV board) that you want to control from an automation system. For RS-422 wiring details, see "Remote 1 and Remote 2" on page A-9.

Remote Control from a System Using Sony Protocol (such as an edit controller)

Each ACV board's associated breakout panel includes two remote connectors.

The REMOTE 1 port and REMOTE 2 port both provide Sony protocol control capability for both primary and secondary channels of the associated ACV board. Use either port.

❑ Ensure that each configured panel (Sony is currently only available for the Rec/Mon panel) has selected the Sony protocol item in that panel's pop-up selector. See "Controller Setup" on page 4-25.

❑ For each breakout panel in your AirSPACE configuration, ensure that the editing system's RS-422 port(s) are properly connected to the desired remote port(s) on the breakout panel.

❑ Repeat the above item for *each channel* (on each ACV board) that you want to control from an automation system. For RS-422 wiring details, see "Remote 1 and Remote 2" on page A-9.

Remote Control from Any Device Providing Contact Closure

Each ACV board's associated breakout panel includes one GPI connector. This connector provides 12 assignable control ports (8 inputs, 4 outputs).

❑ For each breakout panel in your AirSPACE configuration, ensure that the controlling device's GPI (General Purpose Interface) port is connected to the GPIO connector on the breakout panel.

❑ For each breakout panel, ensure that the proper GPI "pin" connections are made. For GPI wiring details, see "GPI" on page A-12.

❑ For GPI control, ensure that all GPI triggers are programmed properly from the external device.

GPI functions operate differently in every environment and may have unexpected latencies. GPI operation can not be guaranteed and must be tested for your specific application.

Remote Control Operating Note

Note the following important point regarding remote control operations:

- You can locally monitor remote operations by using the AirSPACE user interface to view the Status Lines for each externally controlled application.

Time Code Modes

The following topics are discussed in this section:

- Event Duration vs. Recorded Duration
- Clip Absolute Time Code
- Clip Relative Time Code
- Virtual Tape Time Code

AirSPACE Release 2 and subsequent releases provides the functionality to both record and playback both VITC and LTC time code. Thus these time code values are always preserved, however they are not currently available to the user via the remote ports or the GUI.

All time code operations are identical in 30 Frame (525/60) and 25 Frame (625/50) rate television systems except that Drop-Frame mode is not available (or needed) in 25 Frame operation.

Event Duration vs. Recorded Duration

All events are described by two different duration values, Event Duration and Recorded Duration. Recorded Duration is the duration of media in an event from first frame of recorded video to last frame of recorded video (perhaps including unrecorded black regions as described under Virtual time code below). Event duration is the difference between the Mark Out and the Mark In. The Event duration is the length of time the event will play under automation control.

Event Duration and Recorded Durations may be viewed by loading the desired event into a Rec/Mon controller.

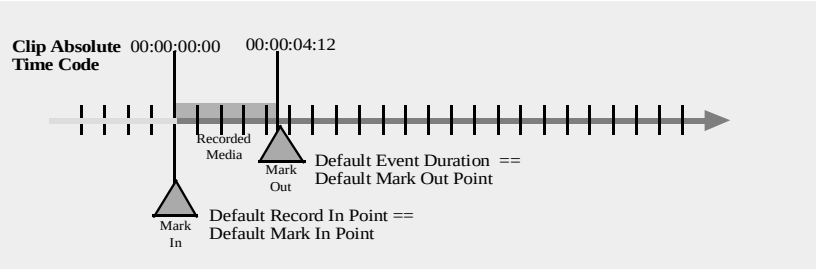
AirSPACE supports three types of user time code indexes called “clip absolute,” “clip relative,” and “virtual tape.”

Clip Absolute Time Code Mode

Absolute mode may also be used when selected by the user on the Rec/Mon panel (or via the LaunchPad application).

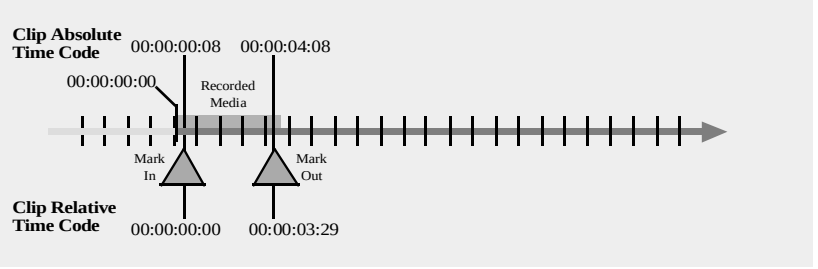
When using Clip Absolute Time Code, the time code is by definition, zero at the beginning of any recording. When recording is stopped, the duration of the clip is equal to the duration of the event from the beginning to the end of the recording, and is an absolute index into an event.

The following figure shows Clip Absolute time code mode before any Mark In or Mark Out points have been set.



Clip Relative Time Code Mode

Clip Relative Time Code is exactly the same as Clip Absolute until you set Mark In or Mark Out to move the beginning or end of an event's playback. After you have selected a Mark In value, the absolute time code can be any value at that In point, but its relative time code is 0. Similarly, once you select a Mark Out value, the system recalculates the Event Duration based on the difference between the In and Out points.



In the example above, Mark In has been set to :08 after the beginning of the recording and Mark Out has been set to 4:08. Thus, the last playable frame of media is at 3:29 and the event duration is 4:00.

When in Absolute Time Code mode, the Mark In position becomes the beginning of the playable media and the Mark Out, the end. In order to view media outside of these points, the user must either clear the Mark or change to another time code index such as Virtual.

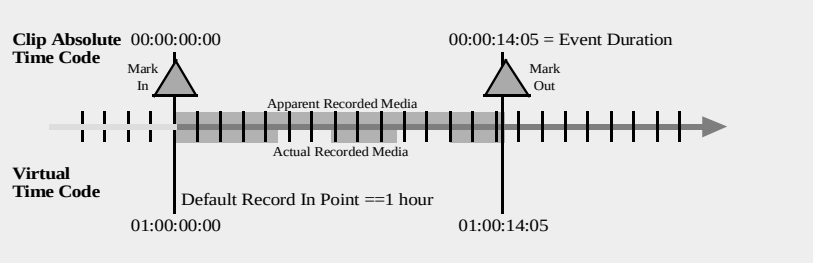
On the Rec / Mon user interface, when in Clip Absolute Mode, Mark In and Mark Out values are expressed in Clip Absolute values, while the current position indicator is shown in Relative time code values.

Relative time code is always reported to controlling automation systems via the VDCP protocol.

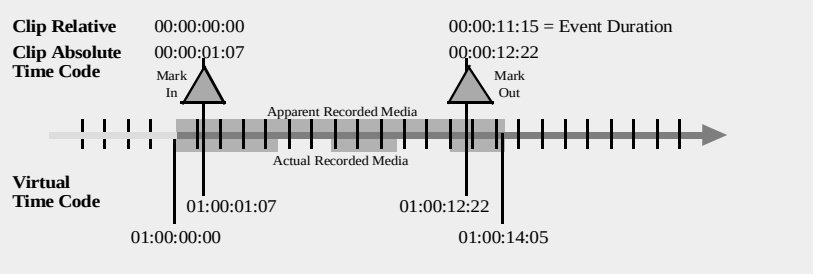
Virtual Time Code Mode

Virtual time code mode provides a time code space that is more useful for editing applications because it allows for preroll before the beginning of a clip and post roll after the end. Additionally, Virtual mode supports events constructed of any number of contiguous or noncontiguous recordings.

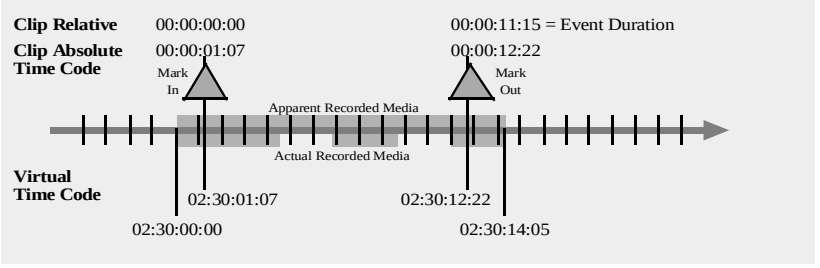
Conceptually, Virtual time code provides a 24 hour space (or 'virtual tape') in which to record media. This virtual tape initially appears to the user as 'pre-striped' or containing black / silence. The default Mark In value and the default beginning of Virtual Tape media are both 1 hour (01:00:00:00). The default Mark Out is the end of the recording. The following diagram shows an example where three recordings are made, separated by a few seconds. These gaps will play back in black and take up no room on the array.



Having made a virtual tape event, while still in virtual mode, you can make marks anywhere within or beyond the range of the recorded media. You view those mark values in either Virtual or Absolute mode as shown in the following diagram:



Finally, you can move the default Record In point in Virtual Time Code mode at any time by cueing to a different location and commencing a recording (or cueing to a point in time prior to existing media if any exists in the event). Doing so maps an event onto a different region of the virtual tape space as shown in the following diagram. This example is identical to the previous one, only recording started at 2:30:00:00 instead of the default 1:00:00:00.



On the Rec/Mon and LaunchPad user interfaces, you can select whether you are operating in Virtual or Absolute Time Code mode. Mark In and Mark Out values as well as the current position indicator are expressed in the time code values appropriate to that selection, as shown in the preceding examples. Mark In and Mark Out have no effect on playing or stopping playout of media from these interfaces when in virtual mode. They only limit the extents of the playable media in Absolute mode.

Virtual Time Code is always reported to controlling devices when under the Sony protocol.

Time Code Values for Network Transferred Events

When you transfer an event to an AirSPACE from a NewsCutter, the system makes a special test to determine where in Virtual Tape time that event is located.

Since most NewsCutter events are created with the beginning at time 00:00:00:00, when AirSPACE receives such an event, it is placed at the default Virtual time of 01:00:00:00 (one hour) for convenience in subsequent editing operations.

When you create a NewsCutter event with a starting time other than zero, the system assumes that the non-zero time value needs to be preserved for later editing or for establishing Mark In and Mark Out values. Thus, when AirSPACE receives such an event, it is placed in Virtual time at the same spot as it was on the NewsCutter time line.

The reverse is true also when events are transferred from AirSPACE to the NewsCutter. Any event with an IN point (in Virtual Tape time) of 01:00:00:00 creates NewsCutter footage with a start time of zero. Any other event IN point creates footage with start time equal to the IN point.

Recording Events Manually

The section provides instructions for manually recording single events with the Record / Monitor application and the Record application. The following topics are discussed in this section:

- Record Setup Checklist
- Closed-ended Recording with the Record / Monitor Application
- Open-ended Recording and Insert Editing with the Record / Monitor Application
- Recording with the Record Application

Record Setup Checklist

Prior to recording manually with the AirSPACE video server, ensure that the following system setup functions are set as desired:

❑ Ensure that the AirSPACE video server is properly installed, with all audio and video ports connected — per your specific requirements. Ensure that all incoming audio, video, and time code signals are properly routed to the AirSPACE video server (you can use the “In” indicator to verify good video). For details, see Chapter 2, “Installation.”

❑ Ensure that the AirSPACE video server’s video format and audio source is properly selected. For instructions, see “System Configuration” on page 4-10.

❑ Ensure that you have assigned the desired number of Record / Monitor applications and / or Record applications, as appropriate for your specific configuration. See “Controller Setup” on page 4-25.

❑ Ensure that each playout channel's VITC output line and record channel's VITC input line is properly set (if desired). See "Channel Configuration" on page 4-16.

❑ If desired, name the channel so that its custom name appears in the application's Status Bar. For detailed instructions, see "Renaming a Channel" on page 4-19.

❑ For EE monitoring, playback verification and trimming (with the Record / Monitor application only), ensure that a monitor is connected to the desired ACV board's primary digital output connector (PB 1), composite analog output (MON), or to one of the associated breakout panel's composite analog or component analog connectors.

❑ If a component analog output is to be used for monitoring, ensure that the selected channel's component analog outputs are set to the desired format. For details, see "Channel Configuration" on page 4-16.

❑ For EE monitoring purposes (with the Record application), ensure that a digital video monitor is connected to the desired ACV board's EE playback output connector (PB 2).

Closed-ended Recording with the Record/Monitor Application

Closed ended recording is used when the duration of the record is known and the user wants the system to automatically stop recording after a pre-determined duration.

To manually closed-ended record and trim events with the Record/Monitor application:

1. Determine the channel on which you want to record. If the Record / Monitor is not already visible, click the Menu Select button, select the Controls menu, then open the Record / Monitor application for the channel on which you want to record events.
2. If not already selected, select "Absolute" time code mode from the time code pop-up selector.

3. In the Event ID text box, enter a new ID for the event — up to eight alphanumeric characters in length. The Event ID can not contain any of the following characters: *, ?, :, /, and \. Press ENTER to accept.
4. In the Event Name text box, enter a name for the event — up to 31 alphanumeric characters in length.
5. In the Duration text box, enter the desired duration for the event - this value will automatically terminate recording when it is reached.

Because you are recording manually (and because you can trim), you might want to enter a duration longer than the event's actual length. For example, if the event is a 30-second commercial, set your record duration to 35:00 — to allow for preroll and reaction time.

6. Click Create to create a new event, and place the AirSPACE video server in the "standby" mode.
7. Manually cue up and roll your source material.
8. Click Record to begin recording the event.
9. The event automatically stops recording when the assigned duration is reached — however, if you want to stop recording earlier than the assigned duration, click STOP.
10. To trim the inpoint (if required), use the controls in the application's Transport Control section (Shuttle, Jog, Play, Stop) to cue the event to the desired inpoint.
11. Click the Mark button adjacent to the Mark In text box to set the event's new inpoint.
12. To trim the outpoint (if required), use the controls in the application's Transport Control section to cue the event to the desired outpoint.

13. Click the Mark button adjacent to the Mark Out text box to set the event's new outpoint.
14. To review the event (if desired), cue the event to the first frame by clicking Cue adjacent to the Mark In text box, then click Play.
15. Repeat steps 3 through 14 to manually record additional events.

Open-ended Recording and Insert Editing with the Record/Monitor Application

Open ended recording is used when the duration of the record is not known and / or the user wants to edit into an event, either insert recording over existing material or making multiple insert edits anywhere within a 24 hour time line. Any discontinuities between recorded areas will appear as black during playout, but do not take up any space on the array.

To manually open-ended record and trim events with the Record/Monitor application:

1. If the Record / Monitor is not already visible, click the Menu Select button, select the Controls menu, then open the Record / Monitor application for the channel on which you want to record events.
2. If not already selected, select Virtual time code mode from the time code pop-up selector.
3. In the Event ID text box, enter a new ID for the event — up to eight alphanumeric characters in length. The Event ID can not contain any of the following characters: *, ?, :, /, and \. Press ENTER to accept.
4. In the Event Name text box, enter a name for the event — up to 32 alphanumeric characters in length.
5. Click Create to create a new event, and place the AirSPACE video server in Standby.

Because you have selected Virtual time code mode, you can cue to and record anywhere within the 24 hour time code space. It is not possible to specify a record duration, although the "Total Duration" display will indicate the amount of time from the first frame recorded to the last, including any discontinuities.

6. If desired, cue to any time code value where you want your recording to start. By default, recordings start at 01:00:00:00 (one hour).
7. Manually cue up and roll your source material.
8. Click Record to begin recording the event.
9. Recording will continue until you manually stop by clicking on the "Stop" button.
10. Insert as many additional recordings as desired into the current event by repeating steps 6 through 9.
11. To trim the inpoint (if required), use the controls in the application's Transport Control section (Shuttle, Jog, Play, Stop) to cue the event to the desired inpoint.
12. Click the Mark button adjacent to the Mark In text box to set the event's new inpoint.
13. To trim the outpoint (if required), use the controls in the application's Transport Control section to cue the event to the desired outpoint.
14. Click the Mark button adjacent to the Mark Out text box to set the event's new outpoint.
15. To review the event (if desired), cue the event to the first frame by clicking Cue adjacent to the Mark In text box, then click Play.

Recording with the Record Application

The Record application is handy for making recordings on a system where no Rec/Mon applications are available (or where recordings are controlled from an external VDCP controller). A Record application is automatically created on the system for each Playlist application. This application has the following limitations:

- it only works in Absolute time code mode
- it can not load any event which is in use by another controller
- it can not trim Event Mark-In or Mark-Out points

Use the following steps to manually record events with the Record application:

1. If the Record application is not already visible, click the Menu Select button, select the Controls menu, and open the Record application for the channel on which you want to record events.
2. In the Event ID text box, enter a new ID for the event — up to eight alphanumeric characters in length. The Event ID can not contain any of the following characters: *, ?, :, /, and \. Press ENTER to accept.
3. In the Event Name text box, enter a name for the event — up to 32 alphanumeric characters in length.
4. In the Duration text box, enter the desired duration for the event, using standard time code notation.

Because you are recording manually, you might want to enter a duration longer than the event's actual length. However, you can not trim with the Record application. This function can be performed either by using the Record/Monitor application exclusively for recording and trimming, or by first recording in the Record application — and then subsequently opening the event in the Record/Monitor (or LaunchPad) application and trimming.

5. Click Create to create a new event, and place the AirSPACE video server in Standby.

6. Manually cue up and roll your source material.
7. Click Record to begin recording the event.
8. The event automatically stops recording when the assigned duration is reached — however, if you want to stop recording earlier than the assigned duration, click STOP.
9. Repeat steps 2 through 8 to manually record additional events.

After an event is created, it is logged in the database and is available for loading into additional Rec/Mon applications and/or for use in an AirSPACE playlist.

Multiple applications may all be playing and/or recording into the same event. The only limits to this are the number of applications available on a given system.

If two or more users attempt to record very close to or at the same point in the file at the same time, unpredictable recordings (mixed up frames) will occur. If a user attempts to playback too close (within a few frames) to a current recording point, unpredictable playout will occur.

Playing Back Events Manually

This section provides instructions for manually playing back single events with the Record / Monitor application. The following topics are discussed:

- Playback Setup Checklist
- Playback with the Record / Monitor Application

Playback Setup Checklist

Prior to playing back manually with the AirSPACE video server, ensure that the following system setup functions are set as desired:

❑ Ensure that the AirSPACE video server is properly installed, with all audio and video ports connected — per your specific requirements. For details, see Chapter 2, “Installation.”

❑ Ensure that the AirSPACE video server’s video format and audio source is properly selected. For instructions, see “System Configuration” on page 4-10.

❑ Ensure that you have assigned the desired number of Record / Monitor applications, as appropriate for your specific configuration. See “Controller Setup” on page 4-25.

❑ Ensure that each playout channel’s VITC output line is properly set. For details, see “Channel Configuration” on page 4-16.

❑ If desired, name the channel so that its custom name appears in the application’s Status Bar. For detailed instructions, see “Renaming a Channel” on page 4-19.

❑ For playback monitoring (with the Record / Monitor application), ensure that a monitor is connected to the desired ACV board’s primary digital output (PB 1), composite analog output (MON), or to one of the associated breakout panel’s composite analog or component analog connectors.

❑ If a component analog output is to be used for monitoring, ensure that the selected channel’s component analog outputs are set to the desired format. For details, see “Channel Configuration” on page 4-16.

Playback with the Record/Monitor Application

Use the following steps to manually play back and trim events with the Record / Monitor application:

1. If it is not already visible, click the Menu Select button, select the Controls menu, and open the Record / Monitor application for the channel on which you want to play back single events.
2. In the Event ID text box, enter the ID of the event that you want to play back. Press ENTER to accept. The event's information appears in the Event Name, Duration, Mark In and Mark Out text boxes.

If the event information does not appear and the "Create" button becomes enabled, you have entered an ID which does not exist on the server. You can click on the pencil eraser button to clear your selection and try again. You may want to refer to the Event Database on the Playlists menu to view a list of the events currently on the system.

3. In the application's Transport Control section, click Play.
4. The event automatically stops playing when the current outpoint is reached — however, if you want to stop playback earlier than the assigned duration, click STOP.
5. To manually view the event, use the controls in the application's Transport Control section (Shuttle, Jog, Play, Stop) as required. Select the desired time code mode as follows:
    - Select Virtual mode to allow shuttling anywhere in a 24 hour time code space
    - Select Absolute to constrain viewing to only the area within the Mark-In and Mark-Out points for this event
    - To view the entire recorded event in Absolute mode, clear the Mark In and Mark Out values with the associated Clear buttons

6. To trim the inpoint (if required), use the controls in the application's Transport Control section to cue the event to the desired inpoint.
7. Click the Mark button adjacent to the Mark In text box to set the event's new inpoint.
8. To trim the outpoint (if required), use the controls in the application's Transport Control section to cue the event to the desired outpoint.
9. Click the Mark button adjacent to the Mark Out text box to set the event's new outpoint.
10. To review the trimmed event, cue the event to the first frame by clicking Cue adjacent to the Mark In text box, then click Play. Note that any changes to the Mark setting are automatically saved.
11. Repeat steps 2 through 10 to manually play back additional events.

Creating and Modifying Playlists

This section provides instructions for manually creating playlists with the Playlist Builder and Event Database. The following topics are discussed:

- Playlist Setup Checklist
- Creating New Playlists
- Modifying Existing Playlists
- Deleting Playlists

Playlist Setup Checklist

Prior to creating playlists, ensure that the following functions have been performed:

❑ Ensure that the AirSPACE video server is properly installed, with all audio and video ports connected — per your specific requirements. For details, see Chapter 2, “Installation.”

❑ Ensure that the events that you want to include in your playlists have been properly recorded on the AirSPACE video server. For instructions, see “Recording Events Manually” on page 5-11.

At any time prior playing lists out, the following item should also be performed:

❑ Ensure that each event that you include in your playlists has been properly trimmed to the desired inpoint and outpoint. For instructions, see “Playing Back Events Manually” on page 5-17.

Creating New Playlists

To manually create new playlists with the Playlist Builder and the Event Database:

1. Click the Menu Select button, then select the Playlists menu.
2. In the Playlist Builder section, click New to display the Name Playlist dialog box.
3. Enter a playlist name, up to 32 alphanumeric characters in length, then click OK to accept the name.
4. In the Event Database section, click in the Event ID text box and type in the “selection” criteria for the events that you want to display in the Event List, then select Enter or Return. This sets the scope of events to be displayed in the Event List section in order to view a more manageable sized list. The text box is a filter that

searches all events for a match based on the letters and numbers that you type. The following basic rules apply:

- Enter an asterisk (*) to list all events on the server. The asterisk is a universal matching character which matches everything.
- The asterisk can be used in conjunction with other characters to find everything that starts with any particular character(s) (xxx*), ends with any particular character(s) (*xxx), or contains any particular characters (*xxx*), where xxx represents the characters for which you are looking. For example, type **PSA*** to list only those events where the ID begins with the letters PSA.
- Type the desired letters and/or numbers to set the match criteria. When you press Enter, the first matches appear in the Event List, scroll down to see more. The total number of matched events appears below the text box.
- For more detailed information about selecting events using Event ID matching strings, see “Event Database Controls” on page 3-45.

5. Sort the Event List if desired, by clicking one of the five column headers. The heading will highlight in blue and the list will sorted by the selected column heading.
6. Highlight the event(s) in the Event List that you want to add to the playlist. You can highlight a single event, a continuous block of events using the Shift key, or a discontinuous range of events using the Ctrl key. For additional selection instructions, see “Event List” on page 3-47.
7. In the Playlist Builder section, click ADD to add the selected events to the new playlist. Please note:
   - If no events are highlighted in the Current Playlist, new event(s) are added at the bottom of the playlist.
   - If a single event (or multiple events) are highlighted, new event(s) are added above the top-most highlighted event.

8. Repeat steps 6 and 7 to add all desired events from the current selection of events to the playlist.
9. Repeat steps 4 through 7 to re-select other events in the Event Database, in order to add events from a different selection to the playlist.
10. In the Playlist Builder section, if you need to delete an event (or multiple events) from the Current Playlist, highlight the desired event(s) and click REMOVE. You can remove a single event, a continuous block of events, or a discontinuous range.
11. When all events have been added to the new playlist, click Save to save the list on the AirSPACE Server. This list is now available for use in the Playlist application.
12. To create another new playlist, repeat steps 2 through 11.

Modifying Existing Playlists

To manually modify existing playlists with the Playlist Builder and the Event Database:

1. Click the Menu Select button, then select the Playlists menu.
2. In the Playlist Builder section, if an existing playlist is currently open, click Close (and save the playlist if prompted / desired).
3. Click Open to display the Open Playlist dialog box.
4. Use the scroll bar to scroll the list, highlight the desired playlist, and click Open to display the list in the Current Playlist section.
5. Add a new event (or multiple events) and / or as described in steps 4-7 in the previous section
6. When all modifications to the playlist are complete, you have two options:
    - Click Save to save the modified list with the current name, replacing the previous version of this list.

- Click Save As to save the modified playlist with a new name. When the Name Playlist dialog box appears, type a new name and click OK to accept.

The modified list is now available for use by an automation system, or in the Playout application.

7. To modify another playlist, repeat steps 2 through 8.

Deleting Playlists

To delete a playlist from the server:

1. Click the Menu Select button, then select the Playlists menu.
2. In the Playlist Builder section, click Delete to display the Delete Playlists dialog box.
3. Use the scroll bar to scroll the list, highlight the desired playlist, then click Delete to remove it from the server.

You cannot delete a playlist that is currently in use by any playlist controller application on the system — a warning dialog will appear if you attempt to do so.

Playing Back Playlists

The section provides instructions for manually playing back playlists with the Playout application. The following topics are discussed:

- Playback Setup Checklist
- Using the Playlist Application

Playback Setup Checklist

Prior to manually playing back playlists with the AirSPACE video server, ensure that the following system setup functions are set as desired:

❑ Ensure that the AirSPACE video server is properly installed, with all audio and video ports connected — per your specific requirements. For details, see Chapter 2, “Installation.”

❑ Ensure that the AirSPACE video server’s video format and audio source is properly selected. For instructions, see “System Configuration” on page 4-10.

❑ Ensure that you have assigned the desired Playlist applications, as appropriate for your specific configuration. See “Controller Setup” on page 4-25.

❑ Ensure that each playout channel’s VITC output line is properly set. For details, see “Channel Configuration” on page 4-16.

❑ If desired, name the channel so that its custom name appears in the application’s Status Bar. For detailed instructions, see “Renaming a Channel” on page 4-19.

❑ For playback monitoring (with the Record / Monitor application), ensure that a monitor is connected to the desired ACV board’s primary digital output (PB 1), composite analog output (MON), or to one of the associated breakout panel’s composite analog or component analog connectors.

❑ If a component analog output is to be used for monitoring, ensure that the selected channel’s component analog outputs are set to the desired format. For details, see “Channel Configuration” on page 4-16.

Using the Playlist Application

To initiate the play out of a playlist with the Playlist application:

1. If not already visible, click the Menu Select button, select the Controls menu, and open the Playlist application for the channel on which you want to play back the playlist.
2. In the Playlist text box, click the Down Arrow and select a list from the menu. Once selected, its name appears in the text box and the list's contents appear in the Playlist Display section.
3. Click NEXT to begin manual list playback. Please note:
   - The Event Clock counts down to the next event. When the clock reaches zero, the first event is logged, the clock resets to the next event's duration, the list scrolls up and the next event begins to play. This cycle repeats until the end of the playlist is reached.
   - The playlist can be scrolled while it is playing back events, or while it is paused. This feature allows you to review upcoming events, or those that have already been played.
4. If you want to interrupt or override the list playback, use the three Playlist Action buttons (NEXT, FREEZE, and CUE) as required.

The SKIP and HOLD functions are currently not implemented.

The three Playlist Action buttons perform different functions depending upon the current state of the playlist. See "Playlist Control Section" on page 3-28 for a set of comprehensive tables that explain each button's function based on different states of the active playlist.

5. To play back a different playlist, repeat steps 1 and 2 above. Note that if you load a new playlist while a current list is already playing, you will be prompted with a confirm dialog, the current list will be halted, and the new list will be loaded — ready to play back from the "standby" state.

Deleting Events

You can manually delete events from the AirSPACE video server GUI from three different locations:

- Record / Monitor application
- Record application
- Event Database

You can also delete events from the NT application MissionControl.

To delete events using the Record/Monitor application:

1. Click the Menu Select button, select the Controls menu, then open the Record / Monitor application.
2. In the Event ID text box, enter the ID for the event that you want to delete. Press ENTER to accept.
3. Click the Delete button to display the Delete Event dialog box.
4. Click Yes to delete the event.

To delete events using the Record application:

1. Click the Menu Select button, select the Controls menu, then open the Record application.
2. In the Event ID text box, enter the ID for the event that you want to delete. Press ENTER to accept.
3. Click the Delete button to display the Delete Event dialog box.
4. Click Yes to delete the event.

To delete events using the Event Database:

1. Click the Menu Select button and select the Playlists menu.
2. In the Event Database section, click in the Event ID text box and set the "selection" criteria for the events that you want to display. Type the desired letters and/or numbers, and press ENTER. For more information see Chapter 5-21, Step 4.
3. Sort the Event List if desired, by clicking one of the five column headers. The list will sorted by the selected data text boxes.
4. Highlight the event(s) in the Event List that you want to delete. You can highlight a single event, a continuous block of events, or a discontinuous range of events. For rules on selecting events, see Chapter 5-22, Step 6.
5. Click the Delete button to display the Delete Event dialog box, then click Yes to delete the event.
6. If you attempt to delete an event that is included in one or more playlists, the Delete Warning dialog box appears. Click OK to delete the event, or Cancel to halt the procedure.

Delayed Playout with SPACE Shift

AirSPACE can provide up to 5 delayed outputs from an input when configured for SPACE Shift delay with the Record Loop and Delay Tap applications. The following topics are covered in this section:

- Delay Playback Checklist
- Initiating a Delay Recording with the Record Loop Application
- Initiating a Delayed Playback with the Delay Tap Application

Delay Setup Checklist

Before you initiate a SPACE Shift delay with the AirSPACE video server, ensure that the following system components are properly installed, and the system parameters set as desired:

❏ The AirSPACE video server, with all audio ports and video ports connected and configured. For details, see Chapter 2, “Installation.”

❏ The AirSPACE video server’s video format and audio source. For instructions, see “System Configuration” on page 4-10.

❏ The desired number of Record Loop and Delay Tap applications, as appropriate for your specific configuration. See “Controller Setup” on page 4-25.

❏ Avid recommends that each delay input that you want to record have an accompanying LTC input connected. For details, see “Channel Configuration” on page 4-16.

❏ If desired, a custom name for the channel so that its custom name appears in the application’s Status Bar. For instructions, see “Renaming a Channel” on page 4-19.

❏ If you want EE monitoring of the Delay Input Video, connect a digital video monitor to the desired ACV board’s EE playback output connector (PB 2).

❏ For playback monitoring of the Delay Tap output, connect a monitor to the desired ACV board’s primary digital output (PB 1), composite analog output (MON), or to one of the associated breakout panel’s composite analog or component analog connectors.

❏ If you are using a component analog output for monitoring, set the selected channel’s component analog outputs to the desired format. For details, see “Channel Configuration” on page 4-16.

SPACE Shift controllers have not been tested for concurrent operation with Rec/Mon or Record/Playlist functionality. AirSPACE is only approved for delay applications when no other operations are to be used.

Initiating a Delay Recording with the Record Loop Application

To initiate a delay recording with the Record Loop application:

1. If not already visible, click the Menu Select button, select the Controls menu, and open the Record Loop application for the channel which is connected to the input to be delayed.
2. Ensure that all incoming audio, video, and time code signals are valid using the “A,” “V,” and “Incoming TC” indicators respectively.
3. Place the text cursor in the Delay Capacity time code text box and enter the amount of time you would like to dedicate to this record loop — this value will limit the maximum amount of time for any delay tap from this recording. The value may be any amount of time up to the remaining capacity of the array.
4. Select ENTER.

   The RECORD indicator changes to red and the record loop begins recording to the array into the file name indicated on the Status bar.
5. To stop a delay record, click on the pencil eraser button.

   A confirm dialog will appear to advise you that this will delete the record loop event and halt any playing delay taps. Stop a Record Loop under one of two conditions:

   - When you no longer need it
   - When you want a different delay loop duration

Initiating a Delayed Playback with the Delay Tap Application

To initiate a delayed playback with the Delay Tap application:

1. If you do not have the Delay Tap application open, do the following:
   a. Click the Menu Select button.
   b. Select the Controls men.
   c. Open the Delay Tap application for the channel of which you want to delay the output.
2. Ensure that the Record Loop assigned to the current Delay Tap is recording. You can identify the appropriate Record Loop by finding the matching Event ID in the Status bar.
3. Click in the Output Delay Time Code text box and type in the desired delay value for this Delay Tap. If this text area does not allow type-in, then this delay's Record Loop is not currently recording or is not properly configured. Ensure that the current Record Loop and Delay Tap are properly configured as covered in "Controller Setup" on page 4-25, and ensure that you started the delay recording as described in the previous section.
4. You can assign different delay durations to any number of Delay Taps and start playing them by repeating steps 1 through 3 above as required for each configured Delay Tap application.

CHAPTER 6

AirSPACE with NewsCutter Operations

This chapter provides operating instructions for the AirSPACE and AirSPACE NP video server when configured to work with the Avid NewsCutter. The following topics are discussed:

- Differences between AirSPACE and AirSPACE NP
- Transferring sequences from an Avid NewsCutter
- Using LaunchPad to load clips into an Avid NewsCutter's Record tool
- Using MissionControl to move Events between AirSPACE systems or onto NewsCutter / Unity

As a prerequisite, ensure that you have read the following chapters, and that you are thoroughly familiar with their contents:

- Chapter 3, "User Interface"
- Chapter 4, "System Setup"
- Chapter 5, "AirSPACE Operations"

Differences Between AirSPACE and AirSPACE NP

The following topics are discussed in this section:

- What is AirSPACE NP?
- Restrictions placed on AirSPACE NP

What is AirSPACE NP?

AirSPACE NP is an AirSPACE designed specifically for the television news market with a low price entry point. AirSPACE NP supports up to 4 network transfers from Avid NewsCutters across 100 BaseT ethernet, with 2 play and 2 record SDI streams in progress simultaneously. The expected transfer rate of 1 network stream is 2X real time (~8 MB / sec). This rate is reduced linearly with the increase of network streams. Adding play and record SDI streams reduces the transfer rate as well.

The Avid NewsCutter hardware (speed of the PC) and network traffic will affect the transfer bandwidth. Avid recommends connecting the AirSPACE and NewsCutter systems to an Ethernet switch to reduce other network traffic congestion.

Restrictions Placed on AirSPACE NP

Due to the lower price point, certain restrictions were placed on the AirSPACE NP, to meet only small market television station requirements.

Note the following restrictions placed on AirSPACE NP:

- A maximum of 4 video streams
- DV25 compression only (DV50 requires upgrade to full AirSPACE)

- No interface to Avalon Archive
- No MissionControl, SPACE-to-SPACE copying, or copying from AirSPACE to Unity or AirSPACE to NewsCutter

All restricted features can be enabled, but require an upgrade to full AirSPACE.

Transferring Sequences from an Avid NewsCutter

This section provides instructions for transferring completed sequences from an Avid NewsCutter to an Avid AirSPACE system.

It should be understood that “sequences” in the Avid NewsCutter world become “events” when transferred to AirSPACE. In either case, these are the media files containing audio and video information. When sequences are transferred to the AirSPACE, they are automatically “flattened,” that is, all transitions are rendered and all non-linear edits become one continuous piece of media.

Transfer Setup Checklist

❑ Ensure that there is an appropriate network connection between the desired NewsCutter / AirSPACE combination between which files are to be transferred as described in “Hardware Installation” on page 2-15.

❑ Ensure that communication is configured and tested on both the AirSPACE and NewsCutter sides as described in “Network Configuration” on page 4-6.

Transferring Sequences from NewsCutter to AirSPACE

To transfer sequences from the NewsCutter to the AirSPACE:

1. After completing the sequence, Right-Click the sequence in the Timeline.
2. Choose Post to Playback.

   A dialog box appears asking you the Name and Tape ID of the sequence you want to transfer.
3. If it is not already filled in, enter the Name and Tape ID of your sequence.
4. Click OK to begin the transfer.

   A status window appears indicating the time remaining to transfer the story.

   Once the status bar disappears, a dialog box appears confirming that the story has successfully transferred to the server.

SimulPlay™ (Play-While-Transfer)

SimulPlay, also known as Play-While-Transfer, is a feature in AirSPACE (version 2.6) that allows you to begin playing out the event from the server as soon as the transfer begins—you do not need to wait for the transfer from NewsCutter to finish.

Using LaunchPad to load clips into a NewsCutter's Record Tool

This section provides instructions for loading a clip into the Avid NewsCutter's Record tool.

Before you transfer a sequence to an AirSPACE video server, follow the checklists below.

Record Tool Setup Checklist

AirSPACE Setup

❑ Ensure that the AirSPACE video server is properly installed, with all audio, video ports, and networking connected according to your specific requirements. For details, see Chapter 2.

❑ Ensure that the AirSPACE is properly configured to communicate with NewsCutter. For details, see "Configuring the AirSPACE".

NewsCutter Setup

❑ Ensure that the NewsCutter is properly installed, with all audio and video ports and networking connected according to your specific requirements. Refer to Avid for details regarding proper NewsCutter installation.

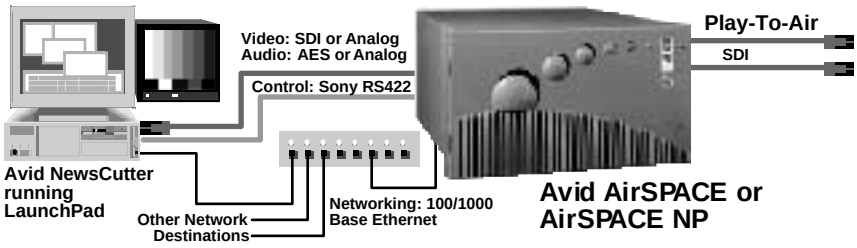
❑ Configure the NewsCutter to communicate with an AirSPACE. See the NewsCutter documentation.

❑ Verify communications between the NewsCutter and AirSPACE. For details, see "Verifying Communications" on page 4-9.

❑ Verify that LaunchPad is properly installed on your system. Refer to the installation instructions provided with the LaunchPad software.

Configuring AirSPACE and NewsCutter to Work with LaunchPad

Use the following diagram as a wiring reference when using the AirSPACE as a video source for the NewsCutter:



Please note the following points:

- In this configuration the AirSPACE looks like a standard VTR to the NewsCutter.
- In this configuration only one NewsCutter can be accessing any one channel of the AirSPACE at a time.
- In this configuration the NewsCutter digitizes the video via the SDI video input on the NewsCutter.
- In this configuration, no video travels over the network. The network connection is used only to allow LaunchPad to communicate with the AirSPACE.

Loading AirSPACE clips into the Record Tool

Use the following steps to load clips that were recorded on to an AirSPACE into the NewsCutter's Record tool:

1. Ensure the NewsCutter application is running.
2. Start the LaunchPad application on the NewsCutter or other Windows NT system.
3. Select the Server Name from the popup menu for which you want to digitize from.
4. Select the Server Port to which you are physically connected (Audio, Video and Control) and want to digitize from.
5. Select the Event ID of the clip you want to load.

   Now you should be able to return to the NewsCutter application and control the AirSPACE using the NewsCutter's Record tool.

Using MissionControl to Copy or Move Events

This section provides instructions for copying or moving Events between any two connected AirSPACE systems or from an Avid AirSPACE system to a NewsCutter or Avid Unity system.

MissionControl functionality is only available on fully configured AirSPACE systems or AiRCHIVE arrays. MissionControl can not be used with AirSPACE NP or CP. MissionControl is required for network transfers of media from an AirSPACE to a NewsCutter and can not therefore be used with NP or CP models.

MissionControl Setup Checklist

❑ Ensure that there is an appropriate network connection between the desired NewsCutter / AirSPACE combination between which files are to be transferred as described in “Hardware Installation” on page 2-15.

❑ Ensure that communication is configured and tested on both the AirSPACE and NewsCutter sides as described in “Transfer Setup Checklist” on page 6-3.

❑ Verify the MissionControl application is properly installed on the computer to be used for controlling transfers — this computer may be a NewsCutter or any other connected NT PC. Refer to the installation instructions provided with the MissionControl software.

Transferring Events Between AirSPACE Arrays

To transfer events from any two connected AirSPACE or AiRCHIVE Arrays:

1. Launch a copy of MissionControl by double-clicking on it’s shortcut or using the Start menu.
2. Choose one of the desired AirSPACE Systems in the system pop-up selector. If the desired system does not appear in the list, refer to the MissionControl documentation for adding servers to this list.

   When the connection successfully completes, the list of available events on the connected system appears.
3. Repeat steps 1 and 2 for as many additional AirSPACE or AiRCHIVE systems as desired.
4. Highlight the desired event(s) to be moved or copied by clicking, Shift+clicking or Ctrl+clicking as many as desired in the window of the MissionControl connected to the desired source array.

5. To copy, click on any highlighted event (the cursor appears as a plus sign), and drag-and-drop them onto the window of the MissionControl connected to the desired destination array.
6. To move, Ctrl+click on any highlighted event (the cursor will show a minus sign), and drag-and-drop them onto the window of the MissionControl connected to the desired destination array.

Transferring Events From an AirSPACE Array to NewsCutter

To transfer events from any connected AirSPACE or AiRCHIVE Array to a NewsCutter or Unity system:

1. From a NewsCutter, launch a copy of MissionControl by double-clicking on it's shortcut or using the Start menu.
2. Choose the desired source AirSPACE System in the system pop-up selector. If the desired system does not appear in the list, refer to the MissionControl documentation for adding servers to this list.

   The list of available events on the connected system will appear in the window as soon as the connection is successfully completed.
3. Highlight the desired event(s) to be moved or copied by clicking, Shift+clicking or Ctrl+clicking as many as desired in the window of the MissionControl connected to the desired source array.
4. Click on any highlighted event and drag-and-drop them onto the NewsCutter Clip Bin.

   If the NewsCutter is standalone, the event is copied directly to that NewsCutter's drives. If the NewsCutter is Unity connected, the event is copied directly to Unity.

SimulRecord™ (Transfer-While-Record)

SimulRecord, also known as Transfer-While-Record, is a feature in AirSPACE (version 2.6) that allows you to begin transferring a new

event to NewsCutter or to another AirSPACE Server as soon as recording of the event begins—you do not need to wait for the entire event to be recorded before beginning the transfer.

CHAPTER 7

AirSPACE CP Operations

This chapter provides operating instructions for the AirSPACE CP video server. The following topics are discussed:

- Differences between AirSPACE and AirSPACE CP
- AirSPACE CP Application Overview

As a prerequisite, ensure that you have read the following chapters, and that you are thoroughly familiar with their contents:

- Chapter 3, “User Interface”
- Chapter 4, “System Setup”
- Chapter 5, “AirSPACE Operations”

Differences Between AirSPACE and AirSPACE CP

The following topics are discussed in this section:

- What is AirSPACE CP?
- Restrictions placed on AirSPACE CP

What is AirSPACE CP?

AirSPACE CP is an AirSPACE designed specifically to augment or replace any current Cart Playback system with a low price entry point. AirSPACE CP can be configured with either 2 or 4 video channels and is intended to operate with a simple stand-alone playout control system using the VDCP Control protocol.

AirSPACE CP is intended in general for Playing Spots, Bumpers, Promos, PSAs, and Programs of Any Length

Two stream models support simple ingest during playout under automation control.

Four stream models (with two additional optional streams) provide for flexibility in applications for applications such as:

- Concurrent QC and Load from VTR
- Concurrent Load from Multiple Source
- Concurrent Playout to Multiple Destinations

Restrictions placed on AirSPACE CP

Due to the lower price point, certain restrictions were placed on the AirSPACE CP, to meet only small market television station requirement.

Note the following restrictions placed on AirSPACE CP:

- A maximum of 4 video streams (2 in, 2 out)
- DV25 compression only (DV50 and IMX50 require upgrade to full AirSPACE)
- No Gigabit Ethernet
- No interface to Avalon Archive
- No MissionControl or SPACE-to-SPACE copying
- No Sony Protocol (VDCP only)

All restricted features can be enabled, but require an upgrade to full AirSPACE.

AirSPACE CP Application Overview

All of the functionality described in Chapters 3, 4, and 5 are available for CP configurations within the channel and networking limitations described above. Channels can be configured for Rec/Mon and Record/Playlist functions or even SPACE Shift delay if optionally purchased.

The following sections describe some of the application environments in which AirSPACE CP may be deployed.

AirSPACE CP as a Stand-Alone Spot and Program Play to Air Solution

AirSPACE CP models can provide attractive entry price solutions for economical play to air with superior frame editable DVCPRO quality media. Complete playout packages can be configured with our low cost “CountDown” playout automation or third party automation systems such as Sundance Digital’s “FastBreak” Automation which can even include custom interfaces to your traffic system with many other optional features. Using the industry standard VDCP protocol, AirSPACE CP is fully compatible with most automation control systems including those from Sundance, Florical, Louth, Odetics, Omnibus, Pro-Bel and most others.

AirSPACE CP for Cart Machine Caching as part of a Play to Air Solution

AirSPACE CP can be installed with Cart-Caching solutions such as Florical CachePlayer and CacheManager Automated Cart Replacement control systems. Control systems such as these can offload up to 90% of wear and tear on your cart machine, drastically reducing maintenance and increase reliability of your playout system. Cart Caching software lets you retain your Cart Machine for an additional layer of redundancy. Many such software packages allow import of full program schedules and export As-Run logs with Columbine, BIAS, Enterprise and other Traffic Systems

Any AirSPACE CP system can be upgraded to network media across LAN or WAN between AirSPACE systems, AiRCHIVE very near line storage and from NLE Workstations. They can also be upgraded for more outputs and additional storage time. This ultimately provides upgrade paths to broad range of system configurations, options, and features - All the way to full HDTV if needed.

CHAPTER 8

AiRCHIVE Operations

This chapter provides operating instructions for the AiRCHIVE video server. The following topics are discussed:

- What is AiRCHIVE
- Restrictions placed on AiRCHIVE

As a prerequisite, ensure that you have read the following chapters, and that you are thoroughly familiar with their contents:

- Chapter 3, “User Interface”
- Chapter 4, “System Setup”
- Chapter 5, “AirSPACE Operations”

Differences Between AirSPACE and AiRCHIVE

The following topics are discussed in this section:

- What is AiRCHIVE?
- Restrictions placed on AiRCHIVE

What is AiRCHIVE?

AiRCHIVE is an AirSPACE array and control system configured for very nearline archival storage. AiRCHIVE can be configured at any of the same storage capacities as AirSPACE, up to 96 hours and utilizes Gigabit Ethernet SPACE-to-SPACE transfers.

Media may be freely copied or moved between any Gigabit Ethernet connected AirSPACE and / or AiRCHIVE systems. Facilities for moving data include the MissionControl NT Application (see “Transferring Events Between AirSPACE Arrays” on page 6-8 for additional information). Media may also be moved using Avalon archive solution and supports the ‘File Move’ VDCP command. Data may also be placed on an AiRCHIVE by a NewsCutter system (see“Transferring Events From an AirSPACE Array to NewsCutter” on page 6-9 for additional information).

Restrictions placed on AiRCHIVE

AiRCHIVE systems do not include any video or audio I/O cards and can therefore not play back or record. Note the following restrictions placed on AiRCHIVE:

- No video I/O
- No Sony or VDCP Protocol
- No Record/Monitor, Record/Playlist or SPACE Shift Delay Applications

All resorted features can be enabled, but require an upgrade to full AirSPACE.

APPENDIX A

Specifications

This appendix provides a detailed listing of all technical system specifications and connector pinouts. The following topics are discussed:

- Physical Specifications
- Audio Specifications
- Video Specifications
- Control and Synchronization Specifications
- Data Specifications
- Breakout Panel Specifications
- Connector Pinouts

All specifications are subject to change without notice.

Physical Specifications

Table A-1 AirSPACE video server Physical Specifications

Parameter	Specification
Dimensions *	inches: 19.00 (w) x 10.50 (h) x 23.00 (d) cm: 48.26 (w) x 26.67 (h) x 58.42 (d)
Rack Units	6
SPACE Pod slots	20
SPACE Pod height	inches: 2.0 cm: 5.1
Weight **	pounds: 160 kilograms: 73
Power requirements	100 to 240 Vac, 50/60 Hz Auto Ranging, 600 Watts
Fuse (U.S.)	3AG Slo-Blo® 6.25 Amp, 250 V
Fuse (Europe)	5 x 20mm Type “T”, Sheet III, 3.15 Amp 250 V
Environmental	10°C to 40°C, 90% RH non-condensing
Safety compliance ***	UL, CSA, CE
Emissions compliance	FCC Class A

Notes:

*The chassis can not accommodate side-mounted rack rails.

**L-brackets are required to support the chassis weight.

***In CE countries, a compatible customer-supplied modem must be used for connection to local phone lines.

Audio Specifications

Table A-2 AirSPACE video server Audio Specifications

Parameter	Specification
Channels	8 Channels Per Video Channel AES/EBU
Sampling	48 KHz, 16 or 24 bit precision, Balanced Differential
AC-3	Fully compatible with professional and consumer encoding
Audio Monitoring *	8 Channels Analog out Per Video Channel

Notes:

*Some configurations will be constrained to four channels audio monitoring.

Video Specifications

Table A-3 AirSPACE video server Video Specifications

Parameter	Specification
Video Channels	2, 4, 6, 8 or 10 Programmable Channels ITU-R BT.-601 10 bit Serial Digital Component Video 525 / 625 selectable (SMPTE - 259M)
Number of Inputs	1 to 5, Programmable
Number of Outputs	2 to 10, Programmable
Video Monitoring	NTSC / PAL Composite Monitor Output, Clean Feed and Burned in TC YPrPb / GBR / YC Component Monitor Out (selectable)
Video Compression	25 MB / s (4:1:1) DV and 50 MB / s (4:2:2) DV or IMX

Control and Synchronization Specifications

Table A-4 AirSPACE video server Control and Synchronization Specifications

Parameter	Specification
External Control	RS-422 Control for Each Channel
	VDCP, DVW/BVW emulation and Odetics
	Application Program Interface (API)
	8 GPI, 4 GPO
Manual Control	Graphical user interface provides basic record, play, trimming, and list management capabilities
Timecode	Linear Timecode SMPTE 12M Balanced I/O
	Vertical Interval Timecode, SMPTE 266 Compatible with Input and Output Line Selections
Reference	Analog black burst reference, looping input
Output timing	5 lines advance to 3 lines delay in 1/8th pixel steps
House Time	Derived from VITC on composite reference input
Closed Caption	All Closed Caption lines are preserved

Data Specifications

Table A-5 AirSPACE video server Data Specifications

Parameter	Specification
Mouse Port	6-Pin mini “DIN” connector, for PS/2 compatible mouse.
Keyboard Port	6-Pin mini “DIN” connector, for PS/2 compatible keyboard.
VGA Connector	15-Pin “D” female
SMPTE Alarm	BNC connector, SMPTE 269M Contact Closure to ground (shell)
Ethernet Port	RJ-45 connector, 10 BaseT or 100 BaseT, auto sensing
SCSI	68-Pin High-density connector. Provides independent non-differential Ultra Wide SCSI-2
Video/Monitor Connectors	15-pin “D” High-density connection to breakout panel
Multi I/O Connectors	78-pin “D” high-density connection to breakout panels
Fibre Channel (Optional)	Faster than Real Time transfers between AirSPACE Units or from edit stations. Multiple AirSPACE Units can be linked to increase storage and/or I/O.
Archive Interface (Optional)	Ethernet and Fibre Channel connectivity to most popular data libraries and tape transports
SDTI (Optional)	All channels independently programmable for 4x media transfers

Breakout Panel Specifications

Table A-6 AirSPACE video server Breakout Panel Specifications

Parameter	Specification
Serial Control Port 1	9-Pin “D” female, RS-422
Serial Control Port 2	9-Pin “D” female, RS-422
GPI Connector	25-Pin “D” female
Video / Monitor Connectors	15-pin “D” high-density connection to chassis
Multi I / O Connectors	78-pin “D” high-density connection to chassis
LTC Timecode	In: 1 XLR female, Out: 1 XLR male
AES Audio	In: 4 XLR female, Out: 4 XLR male
Analog Monitor Out	8 XLR male

Connector Pinouts

Thefollowing connectors are listed in this section:

- Remote 1 and 2
- Ethernet
- VGA
- GPI
- SCSI
- Analog Audio Monitor
- Timecode In, Out
- AES In, Out
- Mouse
- Keyboard
- Video / Monitor
- Multi I / O

In order to ensure emission compliance, all cables attached to connectors on the AirSPACE chassis must be fully shielded and properly grounded to the connector shell where possible.

Remote 1 and Remote 2

The following table lists RS-422 specifications for the Remote 1 and Remote 2 connectors on the breakout panel.

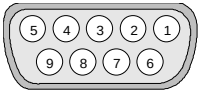


Table A-7 RS-422 Remote 1 and Remote 2 (Breakout Panel)

Pin #	Automation System or Edit Controller	AirSPACE
1	Frame ground	Frame ground
2	Receive A (–)	Transmit A (–)
3	Transmit B (+)	Receive B (+)
4	Transmit Common	Receive Common
5	Spare	Spare
6	Receive Common	Transmit Common
7	Receive B (+)	Transmit B data (+)
8	Transmit A (–)	Receive A data (–)
9	Frame ground	Frame ground

Ethernet Connector Specifications

The following table lists Ethernet connector (RJ-45) specifications on the chassis.

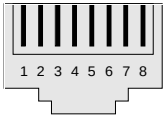
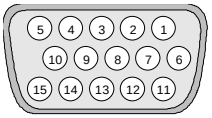


Table A-8 Ethernet Connector Specifications, Female (Chassis)

Pin #	Wire Color	Signal	Function
1	White-Orange	TD+	Positive differential transmit
2	Orange	TD–	Negative differential transmit
3	White-Green	RD+	Positive differential receive
4	Blue	GND	
5	White-Blue	GND	
6	Green	RD–	Negative differential receive
7	White-Brown	GND	
8	Brown	GND	

VGA

The following table lists VGA connector specifications on the chassis.



(Female)
External View

Table A-9 VGA Connector Specifications (Chassis)

Pin #	Signal	Function
1	Red	R output. 0.714 V p-p (± 10%)/75 Ω
2	Green	G output. 0.714 V p-p (± 10%)/75 Ω
3	Blue	B output. 0.714 V p-p (± 10%)/75 Ω
4	Reserved	
5	Digital Ground	Self Test
6	Red return	Red return
7	Green return	Green return
8	Blue return	Blue return
9	Plug	—
10	Digital Ground	Ground
11	Reserved	Ground
12	Reserved	Ground
13	H sync	H sync output (TTL level)
14	V sync	V sync output (TTL level)
15	Reserved	

GPI

The following table lists GPI connector specifications on the breakout panel.

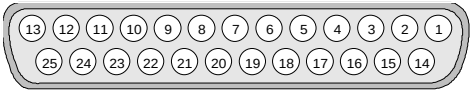


Table A-10 GPI Connector Specifications, Female (Breakout Panel)

Pin #	Signal	Function	Pin #	Signal	Function
1	Ground		14	Ground	
2	GPI Out 1		15	GPI Out 2	
3	GPI Out 3		16	GPI Out 4	
4	N/C		17	N/C	
5	N/C		18	N/C	
6	Ground		19	Ground	
7	GPI In 1	Play	20	GPI In 2	Recue/Play
8	GPI In 3	Skip	21	GPI In 4	Still (Stop)
9	GPI In 5		22	N/C	
10	GPI In 6	Record Start	23	N/C	
11	GPI In 7	Record Stop	24	N/C	
12	GPI In 8		25	N/C	
13	N/C				

GPI Notes

All GPI Outs are a switch closure to ground.

All GPI Ins are a switch closure to ground. GPI 6 and 7 require you to connect the returns (DB-25 pins 23 and 24) to Vcc (DB-25 pin 13).

Shielded cable must be used on this connector to maintain RFI compliance. The shield of the cable should be connected to the connector's shield or shell

When you control a REC / MON from GPIs, note the following:

- Record Start and Record Stop function as one would expect.
- Play and Still / Stop function as one would expect.
- Skip and Recue / Play have no effect in a REC / MON.

When you control a Playlist from GPIs, note the following:

- The UI status labels (FREEZE; PLAY; WAIT) are not always in sync with the machine state. For example the icon will be green when the channel is in PLAY; but will indicate WAIT. Any GUI action will update the labels to the correct state.
- The GUI buttons FREEZE and RECUE / PLAY will not override a GPI asserted STILL. Only a GPI PLAY or UI NEXT will override a GPI STILL.
- After a GPI STILL or PLAY is asserted, GPI RECUE / PLAY has no effect.
- After PLAY is asserted from the GUI, a GPI RECUE is actually RECUE + PLAY.
- Following a GPI trigger and GUI asserted FREEZE, the GUI FREEZE label may not correctly reflect the machine state.
- SKIP (Skip to next event) will only function when NEXT is asserted from the GUI and the channel is in PLAY. SKIP will skip to the next event when initiated from a GPI asserted STILL.

SCSI

The following table lists SCSI connector specifications on the chassis.

Table A-11 SCSI Connector Specifications (Chassis)

Pin #	Signal	Function	Pin #	Signal	Function
1	—	Ground	18	Term Power	Term power from | AirSPACE (5V)
2	—	Ground	19	—	Not implemented
3	—	Ground	20	—	Ground
4	—	Ground	21	—	Ground
5	—	Ground	22	—	Ground
6	—	Ground	23	—	Ground
7	—	Ground	24	—	Ground
8	—	Ground	25	—	Ground
9	—	Ground	26	—	Ground
10	—	Ground	27	—	Ground
11	—	Ground	28	—	Ground
12	—	Ground	29	—	Ground
13	—	Ground	30	—	Ground
14	—	Ground	31	—	Ground
15	—	Ground	32	—	Ground
16	—	Ground	33	—	Ground
17	Term Power	Term power from AirSPACE (5V)	34	—	Ground

Table A-11 SCSI Connector Specifications (Chassis) (Continued)

Pin	Signal	Function	Pin	Signal	Function
35	DB 12	Data bit 12 - asserted low	52	Term Power	Term power from AirSPACE (5V)
36	DB 13	Data bit 13 - asserted low	53	—	Not implemented
37	DB 14	Data bit 14 - asserted low	54	GND	
38	DB 15	Data bit 15 - asserted low	55	ATN	Attention
39	DB P1	Data parity (odd)	56	GND	
40	DB 0	Data bit 0 - asserted low	57	BSY	Busy - bus is being used
41	DB 1	Data bit 1 - asserted low	58	ACK	Acknowledge - handshaking signal
42	DB 2	Data bit 2 - asserted low	59	RST	Reset - indicates reset condition
43	DB 3	Data bit 3 - asserted low	60	MSG	Message - driven by MESSAGE target
44	DB 4	Data bit 4 - asserted low	61	SEL	Select - selects TARGET initiator
45	DB 5	Data bit 5 - asserted low	62	C/D	Control/Data - indicates bus data type
46	DB 6	Data bit 6 - asserted low	63	REQ	Request - handshaking signal
47	DB 7	Data bit 7 - asserted low	64	I/O	Input/Output - controls data direction
48	DB P	Data bit parity	65	DB 8	Data bit 8 - asserted low
49	GND		66	DB 9	Data bit 9 - asserted low
50	GND		67	DB 10	Data bit 10 - asserted low
51	Term Power	Term power from AirSPACE (5V)	68	DB 11	Data bit 11 - asserted low

Analog Audio Monitor

The following table lists Analog Audio Monitor specifications on the breakout panel.

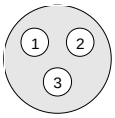


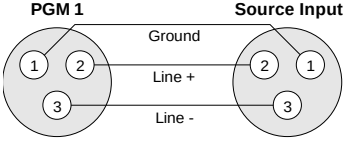
Table A-12 Analog Audio Monitor Connector Specifications, XLR male (Breakout Panel)

Pin #	Signal	Function
1	Ground	Ground
2	+ Line	Positive differential signal
3	– Line	Negative differential signal

Shielded cable must be used on each connection to maintain RFI compliance. The shield of the cable should be connected to the connector's shield.

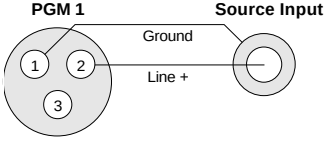
- Balanced Monitor Connection

  For balanced inputs, connections to the source are pin-to-pin.



- Unbalanced Monitor Connection

  For unbalanced connections, disconnect pin 3 (– line).



LTC Timecode

The following table lists LTC Timecode Input specifications on the breakout panel.

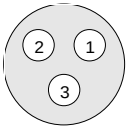


Table A-13 LTC Timecode Input Connector Specifications, XLR female (Breakout Panel)

Pin #	Signal	Function
1	Ground	Ground
2	+ Line	Positive differential signal
3	– Line	Negative differential signal

Shielded cable must be used on each connection to maintain RFI compliance. Connect the shield of the cable to the shield of the connector.

The following table lists LTC Timecode Output specifications on the breakout panel.

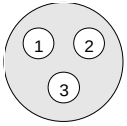


Table A-14 LTC Timecode Output Connector Specifications, XLR male (Breakout Panel)

Pin #	Signal	Function
1	Ground	Ground
2	+ Line	Positive differential signal
3	– Line	Negative differential signal

Shielded cable must be used on each connection to maintain RFI compliance. Connect the shield of the cable to the shield of the connector.

AES Audio

The following table lists AES Input specifications on the breakout panel.

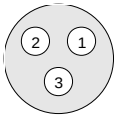


Table A-15 AES Input Connector Specifications, XLR female (Breakout Panel)

Pin #	Signal	Function
1	Ground	Ground
2	+ Line	Positive signal
3	– Line	Negative signal

Shielded cable must be used on each connection to maintain RFI compliance. Connect the shield of the cable to the shield of the connector. In order to reduce excessive emissions, Avid recommends using Belden 1696 AES/EBU, 110Ω digital audio cable to connect the AES digital connections to and from the breakout panel.

The following table lists AES Output specifications on the breakout panel.

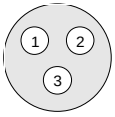


Table A-16 AES Output Connector Specifications, XLR male (Breakout Panel)

Pin #	Signal	Function
1	Ground	Ground
2	+ Line	Positive signal
3	– Line	Negative signal

Shielded cable must be used on each connection to maintain RFI compliance. Connect the shield of the cable to the shield of the connector. In order to reduce excessive emissions, Avid recommends using Belden 1696 AES/EBU, 110Ω digital audio cable to connect the AES digital connections to and from the breakout panel.

Mouse

The following table lists mouse connector specifications.

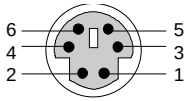


Table A-17 Mouse Connector Specifications (Mini DIN)

Pin #	Signal	Function
1	Mouse Data	Mouse data to CPU
2	Unused	—
3	GND	Ground
4	+5 Volts	+5 V from chassis power supply
5	Clock	Clock pulses
6	Unused	—

Keyboard

The following table lists keyboard connector specifications.

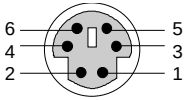
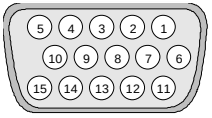


Table A-18 Keyboard Connector Specifications (Mini DIN) Female

Pin #	Signal	Function
1	Keyboard Data	Keyboard data to CPU
2	Unused	—
3	GND	Ground
4	+5 Volts	+5 V from chassis power supply
5	Clock	Clock pulses
6	Unused	—

Video/Monitor Connector

The following table lists video / monitor connector specifications on the chassis and breakout panel.



(Female)
External View

Table A-19 Video/Monitor Connector Specifications (Chassis and Breakout Panel)

Pin #	Signal
1	R PR D Out
2	G Y D Out
3	B PB D Out
4	Ground
5	COMP D OUT RTN
6	R PR D Out RTN
7	G Y D Out RTN
8	B PB D Out RTN
9	Ground
10	COMP D OUT RTN
11	Ground
12	Ground
13	COMP D OUT
14	TC MON D OUT
15	Ground

Multi I/O Connector

Table A-20 lists Multi I/O connector specifications on the chassis.

Table A-20 Multi I/O Connector Specifications (Chassis and Breakout Panel)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	21	GND	41	LTC I +	61	LTC I -
2	LTC 0 +	22	LTC 0 -	42	RX 2 +	62	RX 2 -
3	TX 2 +	23	TX 2 -	43	RX 1 +	63	RX 1 -
4	TX 1 +	24	TX 1 -	44	GPO 3	64	GPO 4
5	GPO 1	25	GPO 2	45	GPI 7	65	GPI 8
6	GPI 5	26	GPI 6	46	GPI 3	66	GPI 4
7	GPI 1	27	GPI 2	47	GND	67	AA O 8 -
8	GND	28	AA O 6 -	48	GND	68	AA O 8 +
9	GND	29	AA O 6 +	49	AA O 7 -	69	GND
10	AA 0 5 -	30	GND	50	AA O 7 +	70	AA O 4 -
11	AA 0 5 +	31	AA O 2 -	51	GND	71	AA O 4 +
12	GND	32	AA O 2 +	52	AA O 3 -	72	GND
13	AA 0 1 -	33	GND	53	AA O 3 +	73	AAI 8 DAI 78 -
14	AA 0 1 +	34	AAI 6 DAI 34 -	54	GND	74	AAI 8 DAI 78 +
15	GND	35	AAI 6 DAI 34 +	55	AAI 7 DAI 56 -	75	GND
16	AAI 5 DAI 12 -	36	GND	56	AAI 7 DAI 56 +	76	AA I 4 DA O 78 -
17	AAI 5 DAI 12 +	37	AAI 2 DAO 34 -	57	GND	77	AA I 4 DA O 78 +
18	GND	38	AAI 2 DAO 34 +	58	AAI 3 DAO 56 -	78	GND
19	AAI 1 DAO 12 -	39	GND	59	AAI 3 DAO 56 +		
20	AAI 1 DAO 12 +	40	GND	60	GND		

APPENDIX B

Troubleshooting

The following topics are covered in this appendix:

- System Board Replacement
- Power Supplies
- Technical Support
- Packaging for Returned Materials

System Board Replacement

The system board tray should only be changed by qualified service personnel.

Dangerous voltages are present while the system board tray is removed, if the system remains plugged in.

If you need to remove or install the system board tray, please note the following important information:

- Ensure that the power supply is turned off, and the power cord is disconnected from the system.
- To remove the tray, extract the screws around the perimeter of the upper rear panel (B chassis systems have two 1/4 turn latches in the lower corners).

When the system board tray is being reinstalled, extreme care must be used to avoid bending the connector pins. To reinstall, gently jog the tray back into the chassis, allowing the connectors to self-guide the mating pair into position.

Power Supplies

Power supplies should only be changed by qualified service personnel.

Dangerous voltages are present while one supply is removed and the other is still operating. In this situation, *do not* insert your hand within the chassis cavity.

If you need to remove or install a power supply, please note the following important information:

- Ensure that the power supply is turned off.
- To remove a power supply, rotate the retaining screw counter-clockwise to release the supply from the chassis. Reverse the process when re-installing a supply.

Technical Support

To answer questions and perform remote diagnostics, Avid Technical Support is available 24 hours a day. For assistance, contact:

- Phone: 1-800-NEWS-DNG (1-800-639-7364)
- E-mail: support@plutotech.com

Before contacting Technical Support, please make a note of your system's serial number. The number is located on the rear of the chassis towards the bottom left corner. This information is used to identify your system's hardware, licensing, support agreement, and system history.

Packaging for Returned Materials

It is important to retain all shipping materials for your AirSPACE video server and repair equipment. This includes boxes, foam, palettes and any other materials used to transport AirSPACE equipment. Avid always asks that you re-package your return equipment (for repair) in the replacement equipment shipping container, or in the original shipping container. Avid assumes no responsibility for damages incurred by improperly packaged return equipment.

APPENDIX C

Regulatory and Safety Notices

FCC Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian ICES-003

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Notice

CE

Declaration of Conformity
(According to ISO/IEC Guide 22 and EN 45014)

Application of Council Directives:	73/23/EEC, 89/336/EEC.
Standards to which Conformity is Declared:	EN 60950: 1992 + A1 + A2 + A3 + A4 IEC950: 1992 + A1 + A2 + A3 + A4: 1993 Mod. CISPR 22:1985 / EN 55022:1988 Class A EN 50082-1:1992 / IEC801 -2, -3, -4
Manufacturer's Name:	Avid Technology, Inc. 1925 Andover Street Tewksbury, MA 01876, USA
European Contact:	Nearest Avid Sales and Service Office or Avid Technology International B.V. Sandyford Business Center Unit 3, Dublin 18, Ireland
Type of Equipment:	Information Technology Equipment

Product Name:	Products for the Windows NT Operating System: Media Composer, Film Composer, Avid Xpress, Avid Xpress DV, Avid Unity, Avid | DS, NewsCutter, NewsCutter XP, NewsCutter DV, Symphony Products for the Macintosh Operating System: Media Composer, Film Composer, Avid Xpress, Avid Unity
Base Model Numbers:	None
Product Options:	All
Year of Manufacture:	2000

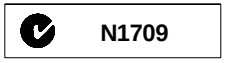
(1) Products for the Windows NT Operating System: products were tested in a typical Media Composer, Film Composer, Avid Xpress, Avid Xpress DV, Avid Unity, Avid | DS, NewsCutter, NewsCutter XP, NewsCutter DV, or Symphony configuration.

(2) Products for the Macintosh Operating System: products were tested in a typical Media Composer, Film Composer, Avid Xpress, or Avid Unity configuration.

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directives and Standards.

George R. Smith, Director of Quality Engineering

Australia and New Zealand EMC Regulations



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Sydney, Australia 2066
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